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# New York State Agricultural Experiment Station

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## THE QUALITY OF VEGETABLE SEEDS ON SALE IN NEW YORK IN 1934 AND 1935

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## ABSTRACT

**T**HIS bulletin discusses the quality of vegetable seeds sold on the open market of New York State during the planting season of 1934, or the season before the present vegetable seed labeling law was enacted, and during the planting season of 1935, or for the year after the present law became effective.

The results show that there are many excellent lots of seed on sale, while on the other hand there are still too many objectionable lots. Tables prepared for each year show the seedsmen and packeters who are worthy of the buyer's confidence and also the few flagrant cases of carelessness and misrepresentation.

A marked improvement over previous practices was noted after the close of 1934 when the seed law was changed. This was reflected in an increase in volume of better seed stocks and the passing out of many questionable stocks and practices of a few packeters.

The change in the vegetable seed law which requires a statement of the percentage of germination and the year tested and which prohibits misrepresentations has proved to be a practical and efficient method of control. It benefits both the buying public and the seedsman who would sell dependable seeds. Under its provisions unfit seeds are seized and removed from sale and the sale of unlabeled lots is prohibited.

The control fields, a necessary adjunct to the seed testing laboratory, were very effective and useful in detecting any misrepresentations by means of the matured crop. All cases which were violations were certified and referred to the Commissioner of Agriculture and Markets at Albany who enforces the seed law.

## THE QUALITY OF VEGETABLE SEEDS ON SALE IN NEW YORK IN 1934 AND 1935

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### INTRODUCTION

This bulletin deals with results obtained from laboratory tests and field trials with samples of vegetable seeds purchased upon the open markets of New York State by inspectors of the Department of Agriculture and Markets during the planting seasons of 1934 and 1935. It will not be possible to publish the complete results of the tests and trials of each of the 3,880 samples concerned but simply to give such condensed tables and other information as circumstances indicate and which will be of most value to the public.

Since the vegetable seed control law was changed by legislative enactment at the end of the 1934 season, the results given here have the added advantage of showing the conditions which existed during the year immediately preceding the amending of the seed law and the season immediately following the change. The results of each year's work will be given separately.

The plan of the work and the methods followed in the testing in the laboratory and field were the same for both years and precisely the same as those given in Bulletin No. 565 of this Station, thus it will not be necessary to repeat them here. Suffice it to say, that the entire collection of packets or samples of the same kind and variety of seed was arranged according to variety name as given by the vendor. Notations were then made concerning the statements as to kind of seed, variety name, year packeted, percentage of germination, year tested, and name and address of person or firm who put up or packeted the

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<sup>1</sup>The author gratefully acknowledges the aid of the several assistants in the seed laboratory, each of whom had to do with some phase of this rather extensive work and thus made its completion possible. Thanks are also due to those plant breeders, vegetable specialists, and growers who gave freely of their expert advice, knowledge, and judgment upon the special cases concerned in this project. The full cooperation of the Department of Agriculture and Markets was given at all times and made the collection of the samples possible.

seeds, as required by the vegetable seed law in force at the time. Notations were also made when additional facts were given, such as price, stock number, strain designation, or method of seed treatment. All of the packets or samples of one kind were then opened, weighed, examined, and analyzed for purity when necessary. In all cases where the goods were in sealed paper packets the net weight of the contents was obtained.



FIG. 1.—VIEW ACROSS THE CONTROL FIELD USED FOR THE MUCK CROPS PLANTED IN 1934.

Each row represents the planting from a single packet. Note the three blank rows at the left. These represent the weak, worthless seed found in some packets.

Seeds for the laboratory, soil box, and field germination tests were counted from the purified seed and with the mechanical counter when possible. All of the laboratory, soil box, and field germination tests of each kind of seed were made on or in the same kind of paper, soil, greenhouse bench, or field location, or other substratum as desired, in the same manner and at the same time, and then given the same treatment as to temperature control, moisture, and cultivation. All of the various lots were identified thruout the entire procedure by the inspector's number. Controls were used as much as possible. The offerings of different dealers or sources of like kind of seed and variety, being immediately adjacent, were easily comparable. Finally, each row was fully labeled as to variety, source, and vendor and the field was open to visitors (Fig. 1).

## DISCUSSION OF RESULTS

### THE 1934 RESULTS

Just previous to the planting season of 1934, 1,768 samples of vegetable seeds were received for test. These consisted of both commission-box packets and regular seed store packets purchased from bulk stocks.

A special effort was made to conduct complete field control trials on the stocks of beet, chard, lettuce, onion, peas, rutabaga, and turnip. In all, 1,339 samples representing the above-named seven kinds of seed were field tested. The results are summarized in Table 1.

### FIELD PERFORMANCE

The field performance of the various lots was particularly interesting and significant. Essentially the same scheme of field rating (Fig. 2)



FIG. 2.—THE COMPARATIVE RANGE IN YIELD FROM SIX CLOSELY ADJOINING 20-FOOT ROWS OF ONIONS.

From left to right, they are classified respectively as “failure”, “poor”, “fair”, “satisfactory”, “good”, and “excellent”. These are the ratings used in recording the field performance of the vegetable crops tested in the control field.

employing the terms “failure”, “poor”, “fair”, “satisfactory”, “good”, and “excellent” as used in previous years and as shown in the accompanying tables was followed.

In studying the comparative type characters and performance records of these seven crops as the season advanced, it is plainly evident that many stocks were true to name and description and were highly productive. When the final check up was made, they were found to be mostly stocks put out by reliable seedsmen or by seedhouses who are professional breeders or growers. These seedsmen also operate trial grounds and have more or less complete control over their seed stocks.

On the other hand, there were approximately 8 per cent of the seed stocks which were plainly misnamed, either deliberately or unknowingly, or else one variety had been substituted for another. In a few of these cases the stocks were out and out misrepresentations in that the seed was plainly a mixture of two or more distinct varieties (Fig.



Harvey Seed Co., Inc., Buffalo.....	29	2	28	3	9	11	2	2	0	0
Budd Hawks, Reading, Vermont.....	21*	0	16	0	6	8	2	2	0	0
Hygrade Seed Co., Inc., Tuckahoe.....	38	28	20	1	0	7	5	3	5	5
D. W. Kaiser, Brooklyn.....	8*	0	8	0	6	1	1	0	0	1
Andrew P. Kennedy, Inc., New York City.....	17	0	8	1	4	3	0	0	0	0
S. S. Kresge Cos. Stores.....	42	0	21	3	10	5	3	0	0	0
Lake Shore Seed Co., Dunkirk.....	67	43	31	0	4	8	10	7	2	10
Lancaster County Seed Co., Paradise, Pa.....	10	1	7	1	1	4	1	1	0	1
Lights Seed Store, Dunkirk.....	6*	3	6	1	2	2	1	0	0	1
R. H. Macy & Co., Inc., New York City.....	8	1	6	2	0	2	2	0	0	0
W. E. Marshall & Co., Inc., New York City.....	19	0	18	0	10	4	4	4	0	0
B. F. Metcalf & Son, Inc., Syracuse.....	24	4	23	3	6	5	6	2	1	1
Montgomery Ward & Cos. Stores.....	56*	0	26	3	13	9	0	0	0	1
George J. Nicht, Auburn.....	20	12	20	1	1	4	4	4	3	2
Northrup-King & Co., Minneapolis, Minn.....	64	1	31	1	11	11	4	3	0	0
Page Seed Co., Greene.....	66	7	33	2	11	9	5	3	0	0
Queen City Seed & Nursery Co., Buffalo.....	30	1	29	2	13	10	2	2	0	2
D. L. Ramsey & Son, Auburn.....	23	12	23	1	5	3	4	1	9	1
Randolph Seed Co., E. Randolph.....	39	12	25	1	7	6	5	4	1	6
J. B. Rice Seed Co., Cambridge.....	27	1	21	4	8	5	4	0	0	0
Jerome B. Rice, Jr., Cambridge.....	8	1	7	0	1	3	1	2	0	1
Robson Seed Farms, Hall.....	28	2	28	4	11	8	4	4	0	1
Max Schling, Seedsman, New York City.....	7	1	7	2	2	3	0	0	0	0
George A. Shaver, Auburn.....	5	1	5	0	0	1	3	1	0	0
Sterling Seed Co., Minneapolis, Minn.....	41	8	26	2	13	7	2	2	0	0
Otto J. Stumpp, New York City.....	7	0	7	2	2	3	0	0	0	0
Stumpp & Walter Co., New York City.....	18	0	14	1	5	7	1	0	0	0
Syracuse Seed Co., Syracuse.....	20	4	20	1	7	4	5	3	0	0
Vaughan's Seed Store, New York City.....	17	0	13	1	5	5	2	0	0	0
James Vicks Seeds, Inc., Rochester.....	55	6	55	7	20	17	7	7	1	2
John Wanamaker, New York City.....	11*	2	9	1	2	3	2	0	0	0
Ward, King & Lawrence, Newburgh.....	7*	1	7	0	0	5	2	0	0	0
V. B. Weber & Sons, Inc., Elmhurst.....	7	0	6	0	4	2	0	0	0	0
John Wilk & Co., New York City.....	6	0	6	0	3	1	1	0	0	0
Miscellaneous sources, a total of 28.....	139	23	118	12	42	34	22	7	4	6

\*Seed packets or containers not dated with "year packaged or put up" as required by the seed law of 1934.

†The terms mixture, misnamed, or misrepresented have different shades of meaning or interpretation as pointed out in the accompanying text.

Since it no longer seems possible to print the extensive results of the test and trial of each particular lot of seed, the results are given in the above tabular form. It is believed that it is easily possible to see at a glance the performance and quality of the seed stocks vended by each principal source or packeter, and more particularly any special seedsman or source in whom the reader may be interested. It is impossible to give due credit to the many good or excellently bred stocks in the above table, nevertheless it shows who vended them as revealed by the inspection work of that year. A statement of the germination percentage was not required in 1934.



FIG. 3.—TWO STOCKS OF BEETS SOLD AS DETROIT DARK RED.

The eight specimens on the left came from a packet of Detroit Dark Red beets sold widely by a packeter. There were at least five different kinds of beets in the mixture; also Swiss chard and sugar beet. The seven specimens at the right are from a row of genuine Detroit Dark Red beets grown from a packet put up by another seedsman.

3). In some instances, the dominant or true strain or variety named was not identifiable, there being present varying characters of type, plant, and product of great confusion. All of the above cases are recorded and grouped together under the terms "misnamed", "mixture", or "misrepresented", respectively, in Table 1. It should be borne in mind in considering these instances in which the buyer did not get essentially what he thought he was getting, that it is held that there is quite a distinct difference between a purely misnamed variety, a deliberate mixture of seed of two or more kinds or varieties, and a misrepresented lot of seed.

#### GERMINATION OR VITALITY

Altho the seed law in force during most of the year 1934 did not require a statement of percentage of germination, the germination testing of the various lots proved a most interesting and valuable study. There were many lots which gave a quick, definite response of strong, sturdy seedlings by whatever methods used, whether laboratory germinator, soil box, or field planting. They showed not only viability, but strong vitality. On the other hand, there were many lots (column 2, Table 1) which showed varying degrees of weakness in vitality. The



germinative response of these lots plainly indicated old seed, rebulked lots, or the mixing together of two or more stocks of different degrees of vitality (Fig. 4).

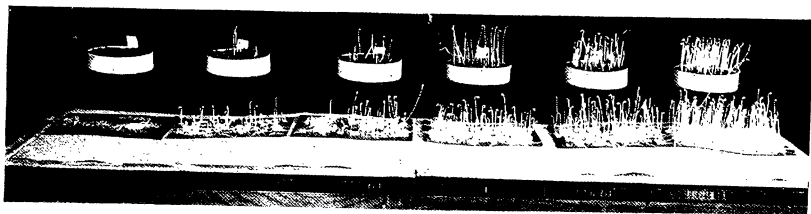


FIG. 4.—THE RANGE IN GERMINATION FROM WORTHLESS SEED TO 100 PER CENT WHICH MAY BE OBTAINED WHEN MAKING GERMINATION TESTS OF STOCKS FOUND UPON THE OPEN MARKET.

In arriving at a dependable measure of vitality of these many lots of seed by using the standardized or suggested methods of germination testing, it was difficult in quite a number of cases to decide just where practical planting usefulness ceased and unfitness or worthlessness began. In other words, some of these lots of seed when germinated produced a rather low percentage of seedlings some of which were really weak or spindling. When tested in soil boxes such lots of seed gave very erratic and uncertain results and some failed entirely. Likewise, when planted in the field under ordinarily good conditions, the stand was very uncertain and often failed completely.

A full discussion of this important subject as it relates to vegetable seeds is given in Bulletin No. 642 of this Station (pages 5 to 8). Suffice it to say, that many seedsmen offered only the best new crop, strong seed while a few others packeted and repacketed old stock of uncertain and unknown viability and vitality. There can be no compromise with low-germinating seed. The seed law under which they were sold required only the marking of the packet with "the year for which packeted or put up", thus allowing the placing of old seed in new packets with no reference to or control over germination.

#### THE 1935 RESULTS

Just previous to the planting season of 1935, 2,112 samples of vegetable seeds, very recently purchased upon the open markets of the State, were received from the seed inspectors for test. The results are given in Table 2.

TABLE 2.—A SUMMARY OF THE RESULTS OF LABORATORY AND FIELD TESTS OF 2,112 SAMPLES OF VEGETABLE SEEDS PACKETED BY THE PRINCIPAL PACKETERS AND VENDORS AND OFFERED FOR SALE IN THE STATE OF NEW YORK DURING 1935 UNDER THE NEWLY AMENDED LAW.

NAME AND ADDRESS OF PACKETER OR VENDOR	TOTAL NUMBER SAMPLES EXAM- INED	NUMBER OF PACKETS INCOM- PLETELY LABELED	NUMBER OF PACKETS GROSSLY MIS- BRANDED AS TO GERMI- NATION	NUMBER OF SAMPLES CONSID- ERED UN- FIT OR WORTH- LESS FOR SEED†	NUMBER OF SAMPLES FIELD TESTED	NUMBER OF SAMPLES OR STOCKS FIELD TESTED AND RATED AS				
						Excel- lent or good	Satis- factory	Fair	Poor	Misnamed mixtures, or misrep- resented†
Auburn Flour & Feed Co., Auburn.....	16	1	1	0	4	0	1	2	1	0
Bloomingdale's Sky Greenhouse, New York City.....	12*	0	0	0	4	0	2	1	0	0
Burnett Brothers, Inc., New York City	17*	0	0	0	0	0	0	0	0	0
W. Atlee Burpee Co., Philadelphia, Pa.	26*	0	2	0	5	2	2	1	0	0
Card Seed Co., Fredonia.....	68	19	4	7	7	4	3	0	0	0
Carter's Tested Seeds, Ltd., Raynes Park, England.....	14	14	0	0	4	3	1	0	0	0
Conklin-Sullivan Co., Binghamton.....	14*	0	0	0	0	7	0	0	0	0
Cook's Feed Store, Geneva.....	21	4	2	1	9	0	2	0	0	0
Cooney, Watts & Cooney, Geneva.....	14*	0	0	0	5	1	2	2	0	0
Crosman Seed Co., E. Rochester.....	78	27	0	0	7	1	5	1	0	0
Deposit Seed Co., Deposit.....	30	5	0	0	1	0	0	1	0	0
Dillingham & Son, Inc., Geneva.....	14*	0	0	0	8	8	0	0	0	0
Dorchester & Rose, Geneva.....	16*	0	0	0	5	2	2	1	0	0
F. H. Ebeling, Syracuse.....	20	1	0	0	7	5	2	0	0	0
F. W. Eberle, Albany and Jamaica.....	22*	0	0	0	7	5	2	0	0	0
Empire Seed Co., Fredonia.....	35	2	2	0	5	1	3	0	0	1
Ferry-Morse Seed Co., Detroit & San Francisco.....	38	2	0	0	8	8	0	0	0	0
Fredonia Seed Co., Fredonia.....	63*	0	0	0	14	1	11	1	0	1
Gardner Seed Co., Rochester.....	19*	0	0	0	4	1	2	1	0	0
Genesee Valley Seed Co., Dalton.....	9	6	2	0	0	0	0	0	0	0
A. W. Gilman, Rochester.....	15*	0	1	0	2	0	0	0	2	0
L. P. Gunson & Co., Rochester.....	25*	0	0	0	6	1	2	3	0	0
Joseph Harris, Inc., Coldwater.....	23*	0	0	0	5	5	0	0	0	0
Hart & Vick, Inc., Rochester.....	38*	0	0	0	11	8	2	1	0	0
Chas. C. Hart Seed Co., Wethersfield, Conn.....	19*	0	0	0	8	4	2	1	0	1

Bud D. Hawkins, Reading, Vermont...	11*	0	4	1	5	2	2	1	0	0	0	0
Peter Henderson & Co., New York City	19*	0	0	0	3	2	2	1	0	0	0	0
Holman's Seed Store, Ithaca...	18*	0	0	0	11	7	7	4	0	0	0	0
Hygrade Seed Co., Tuckahoe...	21*	0	0	1	4	0	0	3	1	0	0	0
S. S. Kresge Cos. Stores...	32	2	0	0	4	1	1	2	1	0	0	0
A. R. Kennedy, Inc., New York City...	22	1	2	1	7	5	5	0	2	0	0	0
Lake Shore Seed Co., Dunkirk...	54I	36	269	131	40	2	2	4	4	5	25	25
MacNiff's Horticultural Co., New York City...	18*	0	1	0	6	2	2	3	1	0	0	0
W. E. Marshall & Co., Inc., New York City...	15*	0	0	0	2	0	0	1	0	1	0	0
Mather Seed Store, Canandaigua...	8*	0	0	0	3	3	3	2	0	0	0	0
W. C. McCollom, Islip, L. I.	16*	0	0	0	6	3	3	2	1	0	0	0
B. F. Metcalf & Son, Inc., Chittanooga	17	4	0	0	7	2	2	4	1	0	0	0
Montgomery Ward & Cos. Stores...	34*	0	0	1	3	3	3	0	0	0	0	0
Nicht's Seed Store, Auburn...	11*	0	0	0	3	0	0	3	0	0	0	0
Northrup-King & Co., Minneapolis, Minn.	34*	0	2	0	1	1	1	0	0	0	0	0
Onondaga Farmers' Supply Co., Syracuse...	20	1	1	0	9	2	2	6	1	0	0	0
Page Seed Co., Greene...	106*	0	6	3	12	0	0	10	2	0	0	0
Putnam's Seed Stores, Deposit...	22*	0	0	0	0	0	0	0	0	0	0	0
Robson Seed Farms, Hall...	31*	0	0	0	9	8	8	1	0	0	0	0
D. L. Ramsey & Sons, Auburn...	19	2	2	1	6	3	3	2	1	0	0	0
Randolph Seed Co., E. Randolph...	32*	0	1	0	3	0	0	2	1	0	0	0
Jerome B. Rice Seed Co., Cambridge...	37*	0	1	0	10	4	4	2	1	0	0	0
Jerome B. Rice, Jr., Inc., Shushan...	22*	0	0	0	5	0	0	2	2	0	1	1
Max Schling Seedsman, Inc., New York City...	17*	0	0	0	0	0	0	0	0	0	0	0
George A. Shaver, Auburn...	16	3	1	1	1	0	0	0	0	0	1	1
Sterling Seed Co., Minneapolis, Minn.	16*	0	0	0	0	0	0	0	0	0	0	0
Otto J. Stumpp, New York City...	14*	0	0	0	5	5	5	0	0	0	0	0
Syracuse Seed Co., Syracuse...	22*	0	1	0	10	4	4	5	1	0	0	0
Vaughan's Seed Store, New York City...	28*	5	1	1	4	1	1	3	0	0	0	0
James Vicks Seeds, Inc., Rochester...	20	1	1	0	0	0	0	0	0	0	0	0
John Wilk & Co., New York City...	20*	0	0	0	5	3	3	1	1	0	0	0
F. H. Woodruff & Sons, Bellerose, L. I.	6*	0	0	0	2	1	1	1	0	0	0	0
Clarence W. Roe, New York City...	19*	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous dealers, a total of 33...	15I	21	2	0	40	21	21	11	6	1	1	1

\* Means that all packets or packages inspected or purchased were completely labeled to comply with the seed law of 1935.

† Means that the seeds taken from the packets showed that there was so few live, useful seeds present as to make the stock practically useless for planting purposes, or the seed was so old as to give only a few weak sprouts of no value in the field or garden.

‡ The terms "misnamed", "mixtures", and "misrepresented" have different shades of meaning as pointed out in the text.

Before discussing the results of this season's tests, it should be pointed out that on Dec. 1, 1934, two very significant changes in the seed law became effective under which these vegetable seeds were sold and later tested. First of all, misrepresentations were prohibited. This applied to any names or statements on the seed containers or any advertising relative thereto and stipulated that they must not be false or fraudulent in any particular. Second, the percentage of germination, together with the year the seed was tested, must plainly appear on the container. The results and the discussion which follows are presented with these changes in mind.

#### FIELD PERFORMANCE

From the 2,112 samples, 480 stocks consisting of the beet, carrot, cucumber, lettuce, parsnip, parsley, radish, salsify, and turnip seeds were selected, planted, and grown to maturity in the control field. What was said concerning the field tests in general in 1934 prevailed in 1935.

Since especial attention was given to the stocks of beets and carrots, the results with these two crops will be mentioned more specifically.

*The beets.*—Among the 126 lots of beets representing 12 varieties under test in the control field, the really excellent stocks were found in the variety Detroit Dark Red. This was especially true of those samples taken from the deliveries to canning crop growers by the leading seedsmen. Several strains of this variety, while differing slightly in uniformity in size, shape, and tops, were exceedingly even in the dark red interior color. The excellent strains came mostly from bulk stocks, altho there were some good strains found in the packet goods. It would seem that vastly more effort and progress has been made toward breeding up or improving this variety of beets than with any of the other 11 varieties tested.

There were some very definite mixtures and misrepresentations noted. A few were certainly not Detroit Dark Red as labeled but were the variety Crosby Egyptian. Also, the packets put out by one packeting concern were a mixture of three or four kinds of red beets, also sugar beet and Swiss chard (Fig. 3). Among the lots of Detroit Dark Red beet rated as fair or poor in quality, it was easily possible to find a wide range of types of all sizes of tops, exterior shapes, sizes of roots, and interior color.

Among the stocks labeled and sold as Crimson Globe and Crosby Egyptian there were found a few which were excellent or good strains

of these two standard varieties. The others exhibited a wide range of shapes, sizes, and exterior and interior color. When the roots were cut there were seen various combinations of colors and zoning. The colors ranged from very light to dark red thru crimson, vermilion, and scarlet. The tops likewise ranged in color from green to deep bronze. About all one could say for some of them was that they were "beets".

*The carrots.*—The 117 samples of carrots, representing eight different kinds, did not exhibit the wide discrepancies between the variety named on the packet and that found in the field as encountered in the beets. There was greater uniformity in most strains. Several stocks were rated as excellent. There were a number of stocks rated as good; others as satisfactory. A few stocks in packets were labeled as "coreless" or with some combination of words indicating a coreless carrot. This did not prove to be true when they were compared with the truly "coreless" strains put out by real carrot breeders. Fortunately, the present seed control law under the misrepresentation provision can effectively deal with just such cases. Two lots of Danvers Half Long packeted by the Lake Shore Seed Co., of Dunkirk, N. Y., were not that variety at all but were judged to be the variety Nantes with only a few roots which could be classed as Danvers. Likewise, two of the packets of Chantenay carrot put out by the same concern were mixed with Nantes carrot.

There were a number of excellent illustrations of the superiority of one stock of carrots over another. One row would show nearly all roots of uniform size, shape, and quality, the result of breeding and selection, while the adjoining row of the same variety but from another seedhouse, would show a wide range of product some of which was quite useless (Fig. 5).

*Miscellaneous.*—The remaining six kinds of vegetables grown in the control field showed some irregularities. Some of these were suspected stocks packeted by certain companies and consequently planted for checking. For instance, one stock of cucumber labeled Improved Long Green proved not to be that variety at all but was White Spine. One stock of lettuce sold as Prizehead proved to be the variety New York. Two stocks of radish widely sold by one particular packeter as French Breakfast were misrepresented in one case, and, in the other case four varieties of radishes were produced. The stocks of rutabagas and turnips planted in 1934 showed some irregularities, consequently packets from certain sources were planted in 1935. Among the lots planted were 15 packets put up by the Lake Shore Seed Co., Dunkirk,

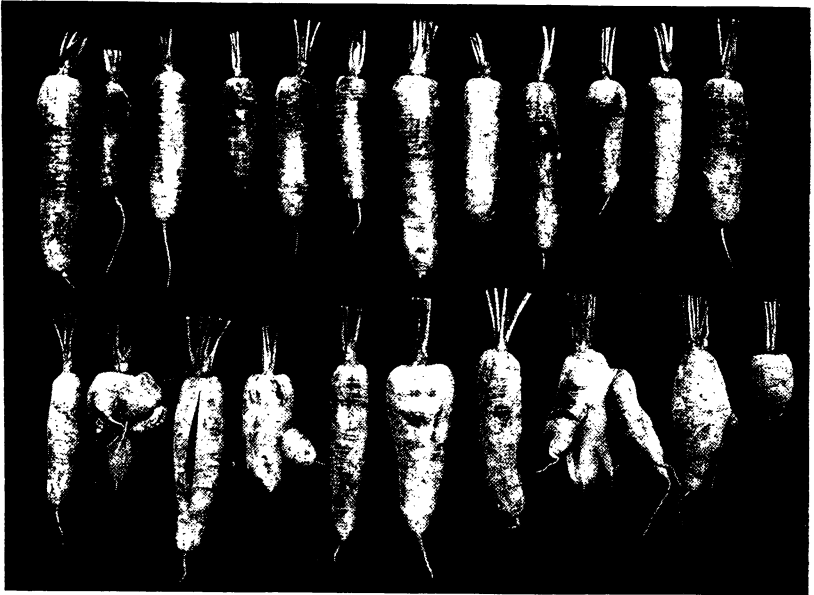


FIG. 5.—THE FIRST 10 OR 12 CARROTS PULLED FROM TWO ADJOINING ROWS OF THE VARIETY NANTES.

The stock shown in the upper row was sold by a reliable seed house. It was practically all excellent and useful. The stock shown in the lower row was of but little value for any purpose. It was sold by another type of seed house and appeared to be of very poor breeding and selection and slightly mixed with a good stock of Danvers Half Long.

N. Y. They were marked "Turnip" in large bold-face type. Below the word turnip and in much smaller type there appeared the words "Ruta Baga". These packets when planted and grown to maturity produced rutabagas and from 18 to 30 per cent by count of turnips of three distinct types. The seeds were mixed and the names incomplete and misleading.

It should be pointed out that there is a vast difference between a substitution, where one equally good or very similar variety is either knowingly or unknowingly substituted for another, and those cases where the seed stock is knowingly and wilfully mixed by blending together two or more often quite unlike varieties. Such practices cannot be too severely condemned.

All of these irregularities or discrepancies were reported by certificate to the Commissioner of Agriculture and Markets at Albany who enforces the seed law.

## GERMINATION

Since under the amended seed law the germination test percentage together with the year the test was made must appear on every container of vegetable seeds sold, offered, or exposed for sale, a series of germination tests to check against the stated percentages were made on every sample or packet as soon as received. After two or three different methods, including a soil box test as a check, were employed for the test when the percentage was found to be more than the reasonable latitude or tolerance below that given upon the container. In the case of all the lots planted in the field, a stand or "come-up" test was also available as a check. What was said on page 9 concerning the question of germination tests in 1934 holds equally true for the results in 1935.

The results of the laboratory and field germination tests compared with those given on the containers for the 2,112 samples purchased from 90 different dealers or sources can best be summarized as follows:

- 162 containers or packets were not marked to show the required percentage of germination and the year the test was made.
- 811 lots gave germinations below or in excess of the reasonable latitude or tolerance allowed on the vendor's germination statement. Of these, 502 were only slightly below, while 309 were grossly misbranded including 269 of the packets of the Lake Shore Seed Company of Dunkirk, N. Y.
- 270 lots gave germinations above the latitude allowed on the germination figure given by the vendor. Some of these were due to "under-labeling" or the tendency to use low "round" numbers to escape the possible chance of misbranding.
- 869 lots germinated essentially the same as or equal to the germination figures printed on the packets or marked on the containers by the vendors. These were stocks sold by the leading seedsmen.

The facts show that so far as correct labeling as to germination is concerned the seedsmen or dealers in meeting the requirements of the seed law fall into three fairly definite classes, as follows:

1. The large group of seedsmen who packet or offer a line of new or vital seed stocks which they have germinated and sell under dependable figures. When these seed stocks were germinated in the laboratory or field, the results were found to coincide very uniformly with those given on the packet or container. There was absolutely no reason for complaint on this point. It was plainly demonstrated that the buying public was fully protected.

2. The second, tho much smaller group, comprised those few packeters who ran their supply of packets thru a printing or stamping machine and placed thereon rather high germination figures, many of which were much too high, and then later proceeded to fill the packets with stocks which did not carry the viability and vitality that they promised or guaranteed. The members of this group encountered trouble as soon as their stocks appeared on the market. Apparently they made a gesture at law compliance. There was a marked tendency to use the "round" number "90" per cent for the stated germination figure, 20 per cent of the packets bearing this percentage figure. The term "85%" came next in popularity.

3. The third, and fortunately the smallest group, included possibly two or three purely packeters who printed their packets with popular high germination percentage figures and then proceeded to packet very largely the same old, low-quality, weak, or worthless seeds. They were in real trouble as soon as inspection work began. Several lots were seized under the provisions of the seed law as being "so weak or low in germination as to be useless for seeding purposes". Reference to Table 2 will show these few flagrant cases.

Investigations and observations made in midsummer as to the possible cause of low germination or weak vitality in these paper packet seeds revealed a few seed packeting houses where large cartons filled with "returned" or "unsold" sealed paper packets were piled high in a warm warehouse subject to heat and cold or changing conditions. It has been shown that certain kinds of seeds, which are really live plants, will not withstand such severe treatment and continue to carry strong vitality thru several months' time or until another planting season. Evidence already gathered shows that while germination tests made in late summer or early fall on held-over stock may show a fairly satisfactory figure, such may not be the case a few months later at planting time when weakened or repacketed stocks are used.

Even tho it is conceded that germination or vitality is secondary to breeding or quality, it is a very necessary factor and one which is under quite definite practical control. The public must be assured of satisfactory germinable seed.

## HOW THE CONTROL FIELDS WERE USED

In 1934 and previous to that time, the control fields were used to grow to maturity the various offerings. Vendors were notified when it was found that any of their seed stocks were irregular. Publicity was



given to the findings. Many visitors came to see the several crops grown from various seedsmen's stocks. Reports were issued to each vendor at the end of the season showing miscellaneous notes taken during the season together with the final decision of the committee or appraisal group who finally passed upon the crop.

In 1935 the function and use of the control fields changed very materially when the law provided that misrepresentations were prohibited. It was then possible to change certain aspects of the work and apply control measures to any or all cases particularly those which were in any way questionable. In every case where it was definitely proved that a misrepresentation had occurred certificates were issued to the Commissioner of Agriculture and Markets who has full authority to proceed against violators. Vendors whose stocks were mixed or misnamed were notified, but none appeared to check up on their offerings thus indicating lack of interest or else silent acknowledgment of their wilfull act or unconscious mistake.

The control fields cannot be used primarily as a trial ground for seedsmen in which to display their offerings, altho they do function in that respect to a certain extent, but they are used as a proving ground as circumstances advise. As a very necessary adjunct to the seed testing laboratory, they must be used each year as a place in which to grow to maturity one or more vegetable crops in order to carry out the intent of the seed law.

### HOW MANY DEALERS APPARENTLY MET THE REQUIREMENTS OF THE NEWLY AMENDED SEED LAW?

Since the seed law, as amended and effective December 1, 1934, definitely requires that "each separate container of vegetable seeds sold, offered, or exposed for sale" shall be clearly and plainly labeled, it was not sufficient to make sales from properly labeled bins, drawers, or other containers or receptacles which may or may not be open to inspection by the prospective buyer, but the "sold" and delivered parcel must be so labeled.

To meet the above requirements many dealers who sold from bulk stocks secured rubber stamps showing most of the required information. This they used to mark bags, envelopes, packets, or other containers in readiness for the rush seed selling season. When sales were made the salesman quickly wrote in the remaining required items, such as kind of seed, variety name, and the percentage of germination,

and the parcel went over the counter fully labeled to comply with the seed law and also to supply the buyer with those very necessary and valuable items of information.

The dealer who sells the commission-box type of sealed paper packets can easily comply with the requirements of the seed law since these goods can be secured fully labeled to meet the requirements of the law.

A few vendors, principally hardware merchants who purchased their vegetable seeds in bulk, apparently used special advertising envelopes supplied gratis and in quantity by the wholesaler. Often these did not supply the necessary legal label information and led to unintentional violations. Then, too, some dealers used envelopes supplied by one seed house in which to vend seeds furnished by another seedsman, thus supplying quite erroneous information.

The final vendor who sells, offers, or exposes vegetable seeds for sale is responsible for the required correct information and he should see to it that this information is properly provided in such manner as will benefit his trade and gain the confidence of the buyer.

#### THINGS THE SEED LAW ACCOMPLISHED WHICH ARE NOT EVIDENT IN THIS REPORT

Previous to the enactment of the present law which makes labeling as to germination compulsory, one large dependable seed house had for a number of years labeled their packets with the percentage of germination. Then more recently another reliable seed house began the practice. Their claims that it was a practical, necessary procedure were substantiated by their performance.

The change in law focused attention on the very necessary factor of germination as had never been done before. It brought out from bags, bins, boxes, and drawers old stocks for test. Some of these were discarded and replaced with new stocks. Some smaller dealers with old stocks on hand found it expensive to retest many small lots, therefore discarded the smaller ones and replaced with newly packeted stocks completely labeled. Previously, it was apparent that many retail merchants, indeed some seed packeters, considered that they could hold seeds over from season to season like hardware until sold, perhaps occasionally adding a little new seed from time to time to keep up the volume needed for the season.

Some dealers turned from bulk stocks to packet goods put up completely labeled by reliable houses. Also, some retailers discontinued

their sales of bulk or loose seeds and retained only the line of packet goods which were prepared ready for sale.

### THE STATUS OF THE LAKE SHORE SEED COMPANY, DUNKIRK, N. Y.

Article 9 of the Agriculture and Markets Law provides that, "the results of the analysis, examination or test of any sample or samples so procured, together with such additional information as circumstances advise, shall be published from time to time in reports or bulletins". In this connection it seems only fair to the seed-buying public of this State and the seed trade in general to call attention to the findings as to the performance of a few seed packeters, particularly that of the Lake Shore Seed Company, of Dunkirk, N. Y. The discrepancy between guarantee or statements made upon seed packets put out by this company and their performance in the laboratory and field has been pointed out repeatedly in data given in previous bulletins. Yet again this past season the usual complaints and inquiries came to the seed testing laboratory as to the reliability of this company and the quality of the packets of seeds sold by them on a commission basis.

In order to meet this demand for facts many samples of seeds put out by this company were purchased by inspectors of the Department of Agriculture and Markets in the course of their duties of seed inspection and law enforcement under the newly amended vegetable seed law. Some lots of seed in the form of commission-box packets packeted by this company and on sale in stores in this State were subject to seizure under the law either because they were improperly labeled or were found by test to be so low in germination as to be unfit for seedling purposes.

In all, 541 sealed paper packets packeted by the Lake Shore Seed Company were purchased. Of these 541 packets, 269 were found to be grossly misbranded as to germination, as shown by the data in Table 2. Of these 269 packets, 131 were found to be unfit or worthless for planting purposes according to carefully conducted and controlled germination tests made in the State's seed testing laboratory. These tests, and also the field trials, were made in close comparison with controls and with competitor's offerings and the results reported are very conservative and reasonable. Of the 40 lots of seed packeted by this company and planted in 1935 in the control fields, 25, or 62 per cent, were found to be either completely misnamed as to variety, that is to say misrepresented, or were mixtures of two or more varieties of

the same kind of seed. For instance, two lots of beet seed when planted and grown to maturity in the field showed plants of Swiss chard in the row. Likewise, two stocks of the old standard varieties of carrots showed at least two distinct types of roots in the harvested crops. This is all information which the public should have and which the seed control work with its testing laboratory and control fields is bound to discover and is obligated to pass along to the public according to the intent and letter of the seed law.

The performance of the Lake Shore Seed Company stands out in striking contrast to that of many seed companies whose packets are widely sold in this State, as revealed in Table 2. In the case of these reputable companies it may be safely said that experience and field trials show that the seed-buying public in purchasing their packets would get exactly what was described thereon.

## GENERAL DISCUSSION

The following general considerations cover the two years concerned in this report.

The mechanical purity (percentage of pure seed) of most of the sealed packets was very satisfactory, but there were some cases in which it could be vastly improved. Some packets contained pieces of slit paper from old packets, also, some contained broken seeds of the same or other kinds as well as stems and dirt particles and other material which is not found in good commercial grades of vegetable seeds.

Weed seeds were found in some lots. The kinds found were about the same as those given in Bulletin No. 616 of this Station. Not enough attention is being given to this question of weed seeds in vegetables. As a good illustration of this point, it is only necessary to cite two cases. Lot No. 511 of beets contained 1 per cent by weight of the seed of what is commonly known as black bindweed, *Polygonum convolvulus*. Still another sample of beets contained the almost unbelievable amount of 4 per cent by weight of the seed of this very noxious field and garden weed.

While the breeding and selection of any kind, variety, or strain of vegetable are all important, good germination is essential. So far as seed viability and vitality expressed in percentage of germination is concerned, it was plainly evident that there was a vast difference between the phrase "packed for 1934", as previously required on packets, and "tested in 1935", as is now required.

There was apparently no correlation whatever between price, size of packets, and amount of pure live seed contained therein. All types of packets and containers were used, however there did seem to be a tendency toward the more general use of a plain packet with more space for vital information the vendor desires to give the buyer.

In contrast to the relatively few who have from time to time expressed some form of objection to the provisions of the newly amended vegetable seed law, there have come many favorable comments from both vendors and buyers to the effect that it has done much to clarify the vegetable seed situation. They contend that it is the only practical and sensible way in which to control uniformly the sale of these seeds.

### LABELING VEGETABLE SEEDS

The following is a copy of the section of the law having to do with the labeling of vegetable seeds.

§ 140. **Label requirements of vegetable seeds.** Each separate container of vegetable seeds sold, offered or exposed for sale within this state for seeding purposes shall be clearly and plainly labeled in the English language as follows:

1. The kind of seed, and the variety.
2. The approximate percentage of germination together with the year said seed was tested, using type not smaller than ten point.
3. The name and address of the person or firm who put up or packeted the seeds and labeled the same.

**RADISH**  
**French Breakfast**

Germination 86%  
Tested 1936

THE BESTEVER SEED CO.,  
SCOTTSVILLE, N. Y.

In order that one may see at a glance what the label requirements for vegetable seeds are the accompanying figure is given as an illustration of a seed packet representing a desirable form for such type of container and one which includes all the requirements. It should be noted that the germination % and the year tested must appear in type not smaller than 10 point, as used in the illustration.