VIRGINIA

VEGETABLE SPECIALIST 1929

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ANNUAL REPORT

1929

Project No. 7a - - - - - Extension Division

By L. B. Dietrich

Horticultural Department, V. P. I.

COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF VIRGINIA

VIRGINIA AGRICULTURAL AND MECHANICAL COLLEGE AND POLYTECHNIC INSTITUTE AND UNITED STATES DEPARTMENT OF AGRICULTURE, COOPERATING

EXTENSION SERVICE

Blacksburg, Virginia,
December 1, 1929.

Mr. J. H. Hutcheson, Director,
Extension Division,
Blacksburg, Virginia.

Dear Sir:

I beg to submit herewith the eighth annual report of the work in Vegetable Extension, Department of Horticulture, for the period beginning December 1, 1928 and ending November 30, 1929.

PERSONNEL

For the period covered in this report the Vegetable Extension work has been done by L. B. Dietrick, Vegetable Specialist, employed three-fifths time and L. C. Rooney, Assistant Vegetable Specialist, employed full time. Each specialist was made responsible for certain phases of the projects. Considerable overlapping has been necessary, however, due to the writer being on a part-time basis and in order to save time and travel.

GENERAL DISCUSSION

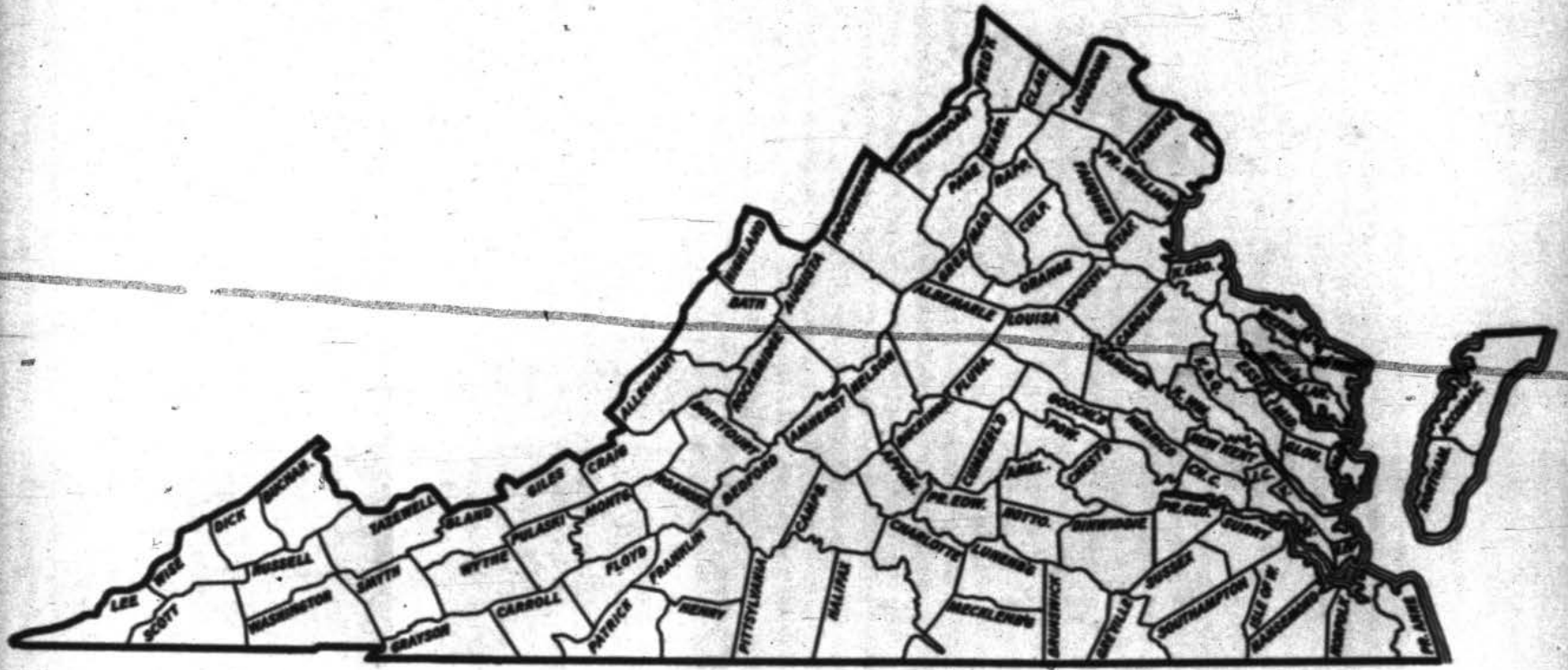
At the beginning of the year a conference of the staff in Vegetable Extension was held for the purpose of outlining the work for 1929. Each project was gone over carefully in all its phases. The failures and mistakes of the past years were thoroly reviewed that the work in the future might profit from them. After thoughtful consideration and study, the Plan of Work for 1929 was formulated. Naturally such a plan closely paralleled the aims set forth in the "Five-Year Program for the Development of Virginia's Agriculture". The goals or objectives for any one year, therefore, might be

[illegible] to steps toward the final goals as outlined in the Five-Year Program--a continuation of old objectives rather than being entirely new in nature. For that reason, therefore, much of the 1938 Plan of Work is more or less a restatement of the Plan of Work for the past years. Relatively few changes have been found necessary and such as were will be discussed in detail under the projects affected by the change.

The work in Vegetable Extension has been limited rather definitely to four main projects, each of which will be discussed separately. Three of these have to do with three of the leading crops in Virginia's olericulture--potatoes, sweet potatoes and tomatoes. The fourth is the Home Garden Project, which has for two years been considered a major project. As in the past, it was necessary to confine the efforts in Vegetable Extension to certain definite projects because of the scope of the vegetable field and because of the ever increasing demands for help made upon this department. If all calls for assistance were answered by the present limited personnel, our work would be so thinly diffused over the entire vegetable industry of the state that no one field would show its imprint. Our efforts, therefore, were confined to those projects which we deemed most vital and essential. All possible help was given to projects of lesser import provided such work did not decrease the efficiency in the main lines of endeavor. Such minor projects as received attention will be discussed later in this report.

Demonstrations were used whenever possible in putting over the program in Vegetable Extension. The ideal of service to the individual in Extension work is past. The greatest good to the greatest number has replaced the old ideal. Therefore, the policy of this department, "To Serve the Many Rather Than the Few", has been continued. Individual service at times must be rendered, but the work has been carried on with the primary purpose of aiding the individual thru serving the community. A total of 3655 demonstrations were given. These included demonstrations on good seed, seeding, thinning, fertilization, cultivation, pest control, harvesting, grading, storage, selecting exhibits, judging, etc.

All available agencies were used to further the work. Such agencies consisted of county agents, county home demonstration agents, marketing organizations, growers' organizations, chambers of commerce, civic leagues, garden clubs, flower clubs, etc. The work was carried on mainly, however, thru the men and women agricultural agents. The measure of the success or failure in any project is the energy with which the agent within the county gets behind that project and pushes it. The specialist without the cooperation of the agent is practically powerless. For that reason the projects were stressed only in those counties whose agents felt the need for and demanded the work.



Counties Visited in 1929.

The general procedure in all projects was much the same as in previous years. A brief outline of the steps in this procedure follows:

1. The agent was approached and informed of the scope and purpose of the project. The work was put squarely up to him to decide whether or not he desired the project for his county.

2. If the agent desired the project, the county was studied and the sections, where work was to be done, determined. The sections finally chosen rested primarily upon the agent's knowledge of the needs of his county.

3. Where construction work was to be done, as in the case of the sweet potato storage houses, contact was first made to determine the actual need of such construction.

4. After carefully surveying the situation with the agent, meetings were held where necessary to discuss the work with the growers. In all instances, the better type of growers were selected as demonstrators in the project.

5. After all preliminary arrangements were taken care of, actual work was started on the project. Such work consisted largely of demonstrations in the several phases of the particular project in question. That phase of the project most needed by the county in question was stressed.

Subject matter to aid the growers was obtained from the United States Department of Agriculture and from various state experiment stations throughout the country. As in the past, the Virginia Truck Experiment Station was consulted from time to time as to the best cultural recommendations for specific crops. The findings of this station have proved of exceptional value because they are particularly applicable to this state.

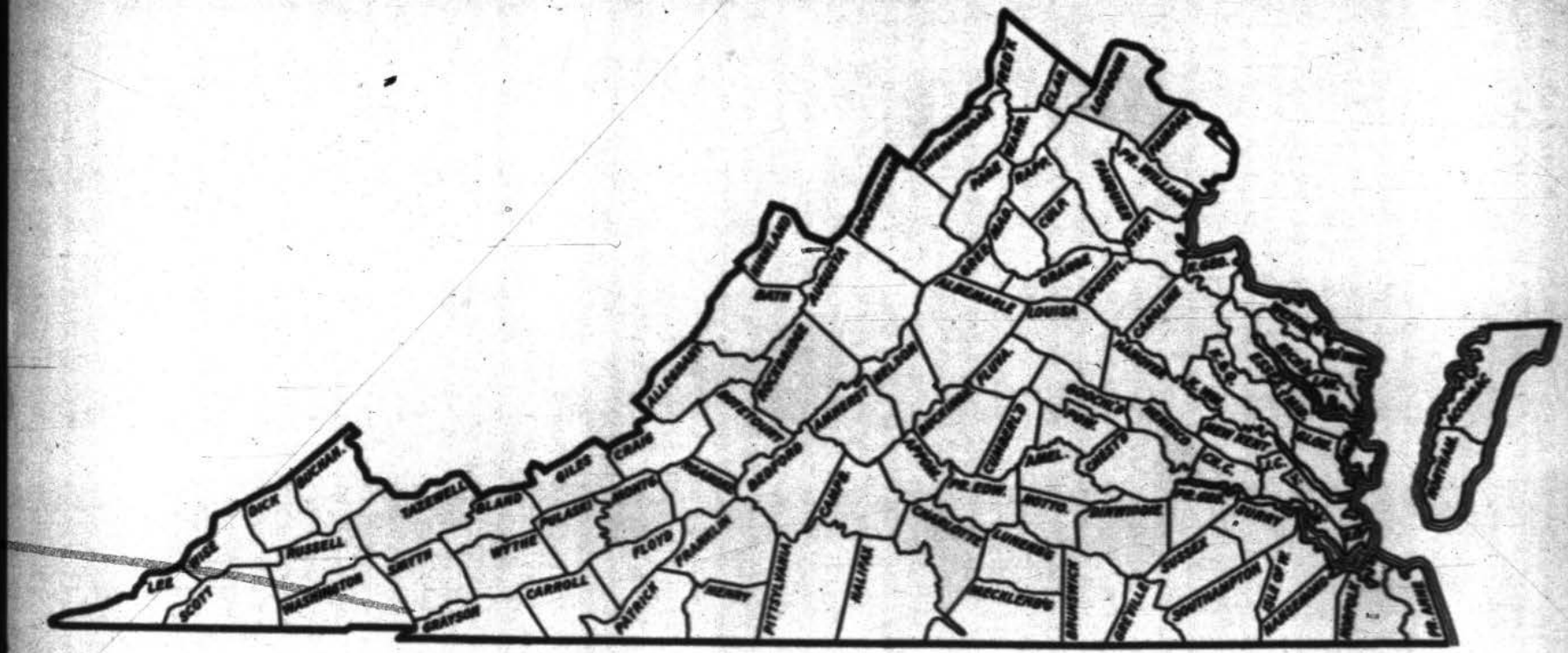
Before discussing the individual projects it might be well to add a paragraph as to the progress in general in Vegetable Extension during the past year. It is difficult, however, to apply the rule of measurement to progress in any type of Extension work over so short a period as one year. Only the outstanding accomplishments loom forth while much of the

deeper significance of the work is lost. For example, the value of soil improvement and crop rotation practices is cumulative and cannot be measured in terms of a year. As a whole, a steady growth has accompanied the work for the past year and its trend will be discussed in the body of the report. In all projects combined, the Vegetable Specialists have visited 25 counties during the period covered by this report. Ninety-six visits were made to county agents, 20 to county home demonstration agents, and 58 to counties where work was performed unassisted by agents. These visits entailed a combined travel of 20,307 miles. One hundred twenty-two meetings were held or attended with an average attendance of 70. Thirty-five 4-H Clubs were met with an average attendance of 31; 15 adult clubs were met with an average attendance of 45. A total of 302 demonstrations were given in the several projects. Twenty-four circular letters emphasizing various phases of the projects were written and 20,614 copies of these letters were distributed. Numerous press articles were prepared and printed. In addition, 1975 letters and 6,402 bulletins carried Vegetable Extension information to practically every county in this state and to several adjoining states.

POTATO PROJECT

Potato growing in Virginia is one of the state's major agricultural industries. For the past ten years her acreage has averaged around 141,000 with an average yearly value of $19,184,000. The total income to the state from this one source is tremendous. Yet over the same period of time the average YIELD per acre has only been 119 bushels. This low yield has resulted primarily from improper cultural practices such as the use of poor seed, low fertilization, failure to control pests, etc. On some of the demonstration plots this past year where proper cultural methods were followed, yields as high as 400 bushels per acre were secured. While such an average production is not to be expected, nevertheless the figure for the state should be raised to at least 150 bushels per acre. The primary purpose of the Potato Project has been to bring this about gradually.

As in the past, due primarily to the extreme variability of Virginia's topography and climate, the Potato Project has been subdivided into three phases, each of which will be discussed separately. In the Potato Project, as a whole, work has been done in 15 counties.



Counties Visited in Potato Project.

1. The Production of Early Potatoes in Eastern Virginia

The early potato grower fared much better this year than last. In 1928, Virginia produced 15,908,000 bushels of potatoes which sold for $6,282,000, an average price of less than $0.41 per bushel. This year an estimated crop of 11,597,000 bushels sold for $14,156,000, an average price of over $1.22 per bushel. Thus the 1929 crop estimated at only 73.4% that of 1928 sold for over 2.1 times as much. The cause of this extreme variation in price may be traced to the acreage planted. The ruinous prices of 1928 were caused by the increased acreages planted in all the early potato producing states. Florida's acreage for 1924-28 showed an increase of 32% over that of the preceding five year period. For the same period South Carolina showed an increase of 43%; North Carolina, 70%; Maryland, 20%; and Virginia, 1.4%. This tremendous increase together with a bountiful harvest brought about the cataclysm in the potato market in 1928. During the past season, the acreage in early potatoes was considerably reduced. Florida's acreage this year was less than 74% that of 1928; South Carolina's was only 58%; North Carolina's, less than 80%; Maryland's, less than 88%; and Virginia's, less than 80%. This reduction plus a lower yield per acre were the chief factors affecting the improvement of the potato market. It is to be hoped that the early potato growers have learned their lesson. This is to be doubted, however, as the "Intentions to Plant Report" shows for the states mentioned an intended increase in acreage of 12.8%.

The question might well be asked, "What brought about the reduction in 1929, with particular reference to Virginia?". Two factors probably played the greatest part in forcing this reduction. The first was economic. Acreage is always reduced the year following a severe price decline. The economic factor, including restricted credit, etc. undoubtedly was responsible for by far the greater part of the reduction, probably 90% of it. Some credit, however, is also undoubtedly due the Interstate Early Potato Committee. This committee kept the facts of the situation together with the necessity for acreage reduction constantly before the minds of everyone engaged in the potato industry - bankers, growers, seedsmen, fertilizer dealers, etc. Some little credit for acreage reduction, therefore, should be due their efforts.

The Vegetable Extension Service has cooperated in every way possible with this committee's program. As in the past, increased acreage has been discouraged and emphasis laid upon increased production per acre. Regardless of the selling price of potatoes the grower with a large production per acre is in a better position to remain in the game and come out ahead. Virginia's average yield per acre for early potatoes this year was only 154

bushels; for the past ten years it has been less than 100 bushels. This yield is far too low and should be raised. Much of the efforts of this department, therefore, has been expended to increase indirectly the yield per acre. Demonstrations on various phases of potato production were given to aid in obtaining this desired end.

Source-of-Seed Demonstration Plots. One of the chief agencies used in putting over the potato program in Eastern Virginia was the Source-of-Seed Demonstration Plots. Five such plots were located in Accomack County. These plots were widely distributed within the county in order that the maximum number of growers might benefit from them. Care was taken to so locate each plot that it might be easily accessible for inspection. Cultural practices for all strains in each plot was identical. Twenty-six strains of Irish Cobblers from known sources were planted side by side. Seed of both known superiority and known inferiority was included in the plot. Each strain was represented by two rows in each plot wherein the strain centered. These rows were of such length that the average yield of the two rows in pounds would be equivalent to the yield of that strain in barrels per acre. This made the yield records readily available to the average grower who has neither the time nor the inclination to figure out complicated field records. It was thought desirable to handle these plots as nearly like farm practice as possible. Therefore, none of the seed was treated before planting, as seed treatment is not customary with the Eastern Shore growers, most of whom use certified seed. However, in an effort to improve the stand the stem end eye of the potato was discarded when cut. The sources of the various strains used in the plots follow:

SOURCES OF STRAINS

Strain	Grower or source
1. F.E.I.	Cert. [illegible] Grower No. [illegible]
2. *F.E.I. Home Grown	Martin Hall, Norway, Va.
3. Maine	Fred E. Conlies, Sherman Mills, Maine
4. Maine	John Prescott, Island Falls, Me.
5. *Maine Home Grown	J. W. Gardner, Onancock, Va.
6. South Dakota	David Sour, Hayti, S. Dak.
7. South Dakota	E. A. Hollin, Watertown, S.Dak.
8. *South Dakota Home Grown	W. B. Pitts, Onancock, Va.
9. North Dakota	Albert Miller & Co., Chicago, Ill. Grown by Leonard Asfeldt, Fordville, N.D.

continued on next page

* Uncertified

Sources of Strains (continued)

	Strain	Grower or Source
10.	Michigan	J. R. Robinson, Pinkston, Mich.
11.	Minnesota	Chas. Lorkin, East Grand Forks, Minn.
12.	Wisconsin	Felix Zolecki, Antigo, Wis.
13.	Wisconsin	Prosser Brother, Antigo, Wis.
14.	Wisconsin	L.S.Jacobson & Son, Mole Lake, Wis.
15.	Vermont	H.A.Joslyn, East Hardwick, Vt.
16.	Vermont	Chas. E. Lapierre, Greensboro, Vt.
17.	New Brunswick	Mrs. S. A. Fay, Petit Rocher, N.B.
18.	New Brunswick	Geo. Farnham, Victoria, N.B. Sent by O.C.Hicks, Sec. N.B. Potato Association, Fredericton, N.B.
19.	Ontario	J. T. Cassin, Alliston, Ont.
20.	Maryland	F. J. Dukes, Girdletree, Md.
21.	New York	A. A. Grimmell Co., Inc., Hilo, N.Y.
22.	New York	F. S. Hollenbeck, Tully, N. Y.
23.	New York	C. C. Neal, Marathon, N. Y.
24.	New York	Wilcox and Jones, Kirkville, N.Y.
25.	New York	W. P. Rogers, Williamson, N.Y.
26.	Utah	New York

An inspection of the seed was made previous to planting and records were kept on the size and maturity of each strain, firmness, length of sprout, type of storage, etc. Such data later serves the valuable purpose of interpreting field records. The performance of the various strains was carefully noted throughout the season. Germination, disease and yield records were kept on each. The plots both individually and collectively served as fine demonstrations of the value of good seed versus poor seed and of Certified Seed versus Home Grown Seed. The accumulated records over a period of seven years make it possible to recommend definitely to the grower the best sources from which to secure his seed.

A germination count was the first field record taken. The germination ran from 85.36% to 99.44%, showing a range of 4.08%. The variation in germination has consistently grown less marked. Thus, in 1927 it was 8%; in 1928, 10.44% and in 1929 only 4.08%. Weather conditions, no doubt, account for a considerable amount of this variation, but the improvement of the seed strains may also play an important part in the gradual reduction. A special effort was made to determine the cause of the missing hills. Failure to germinate was attributed to rot, dead eye, no eye, and lost. Loss was attributed to cultivation, rodents, or complete rot. The averaged germination counts of the five plots follow:

SOURCE OF SEED DEMONSTRATION PLOTS - ACCOMACK COUNTY

Germination Counts - 1939

Source of Seed	Total No. Hills	% Missing Hills	% Weak Sprouts	Causes for Missing Hills: % Rot	% Dead Eye	% No Eye	% Lost
P. E. I.	862	2.90	4.06	2.20	0.12	0.35	0.23
P. E. I. Home Grown	862	3.34	2.90	1.97	0.12	0.35	1.04
Maine-Corliss	862	1.16	0.58	0.23	0.00	0.35	0.58
Maine-Prescott	336	1.79	1.79	0.30	0.00	1.49	0.00
Maine Home Grown	862	1.39	1.16	0.81	0.00	0.35	0.23
S.Dakota-Gear	862	1.39	1.39	1.16	0.00	0.23	0.00
S.Dakota-Hedlin	862	0.81	1.04	0.12	0.00	0.58	0.11
S.Dakota Home Grown	862	1.39	1.39	1.16	0.00	0.00	0.23
N.Dakota-Anfeldt	862	4.04	5.45	3.25	0.12	0.69	0.00
Michigan-Robertson	346	1.73	0.58	1.73	0.00	0.00	0.00
Minnesota-Larkin	346	3.18	3.18	2.89	0.00	0.00	0.29
Wisconsin-Zeloski	862	1.16	1.97	0.93	0.00	0.12	0.11
Wisconsin-Pyramus Bros.	364	0.55	1.37	0.00	0.00	0.55	0.00
Wisconsin-Jacobson	862	2.32	1.39	1.16	0.00	0.70	0.46
Vermont-Joslyn	862	1.62	1.51	0.70	0.12	0.34	0.46
Vermont-Lapierre	862	2.55	1.04	1.97	0.00	0.12	0.46
New Brunswick-Day	862	1.62	0.93	1.16	0.00	0.00	0.46
New Brunswick-Burnham	696	1.58	1.72	0.57	0.00	0.43	0.58
Ontario-Cassin	862	1.86	1.16	1.51	0.12	0.23	0.00
Md.- Eastern Shore	862	1.28	2.55	0.35	0.12	0.23	0.58
New York-Grinnell	2084	2.11	0.96	1.53	0.00	0.29	0.29
New York-Hollenbeck	692	2.02	1.01	1.16	0.14	0.14	0.58
New York-Neal	862	2.90	0.70	1.86	0.12	0.46	0.46
New York-Wilcox & Jones	862	1.97	1.04	0.58	0.12	0.46	0.81
New York-Hogans	862	1.74	1.04	0.81	0.23	0.46	0.23

A study of the above shows rot as the chief cause of missing hills, with lost, no eye, and dead eye ranking in the order named. It is interesting to compare the germination counts with the yield records given later in this report. Altho not holding true in every individual case, nevertheless, a general rule might be stated as follows: The higher the percentage of germination,

the greater was the yield; the lower the percentage of germination, the smaller was the yield. Thus, of the strains occurring in all five plots, the average percent missing hills of the five strains showing the highest yield was 1.53%. The average percent missing hills for five lowest yielding strains was 2.68%.

The second field record taken was a Disease Count. The averaged Disease Count Record of the five plots follows:

SOURCE OF SEED DEMONSTRATION PLOTS - ACCOMACK COUNTY

Disease Counts - 1939

Source of Seed	Total No. Plants	% Diseased Plants	% Mosaic	% Leaf Roll	% Spindle Tuber	% Rhyz	% Wilt
P.E.I.	362	2.55	0.11	1.38	0.00	0.55	0.38
P.E.I. No.Gr.	362	20.75	2.75	15.69	1.66	0.25	0.00
Maine-Corliss	362	3.47	0.00	0.50	0.30	1.38	0.38
Maine-Prescott	354	2.59	0.00	1.20	1.19	0.30	0.00
Maine-No.Gr.	362	4.32	0.00	2.90	1.51	0.11	0.00
S.Dak.-Gour	362	3.35	0.00	1.97	0.12	1.16	0.00
S.Dak.-Redlin	362	4.97	0.00	2.90	0.38	1.62	0.00
S.Dak.-No.Gr.	362	0.82	0.46	0.15	2.09	0.12	0.00
N.Dak.-Anfadt**	362	2.44	0.00	1.39	0.38	0.35	0.00
Mich.-Robinson	346	7.80	0.00	4.62	2.60	0.58	0.00
Minn.-Larkin	346	8.55	0.35	2.02	0.37	5.68	0.00
Wis.-Goloski	362	5.92	0.35	1.62	1.65	2.21	0.35
Wis.-Pressner Bros.	364	7.41	0.00	0.55	0.27	6.59	0.00
Wis.-Jacobson	362	6.96	0.12	2.38	0.35	3.46	0.11
Vt.-Joslyn	362	6.38	0.00	4.52	0.95	0.81	0.00
Vt.-Lapierre	362	4.12	0.00	1.16	1.30	1.39	0.35
N. B. - Ray*	362	1.85	0.00	0.35	0.23	1.38	0.00
N. B. - Farnham	360	2.29	0.00	0.00	0.57	1.72	0.00
Ontario-Cassin	362	2.90	0.12	0.61	1.16	0.70	0.11
Md.- Dale	362	2.52	0.00	0.46	1.38	0.47	0.00
New York-Grinnell	2024	3.62	0.05	1.75	0.32	1.75	0.35
New York-Hollenbeck	362	2.46	0.00	0.38	0.38	1.68	0.00
New York-Neal	362	1.62	0.00	0.11	0.70	0.81	0.00
New York-Wilcox & Jones	362	1.66	0.00	0.12	0.70	1.04	0.00
New York-Rogers	362	3.62	0.00	0.38	0.81	2.44	0.00

** 0.12 Black Leg

* 0.23 Injury

A study of the preceding page will show the relative importance of the various diseases to be in the order named — Leaf Roll, Mycoplasmia, Spindle Tuber, Mosaic, Wilt, and Black Leg.

Here again, a rather close correlation can be observed between disease and yield. In general, the higher the percent of disease, the smaller was the yield; the lower the percent of disease, the greater was the yield. Thus, of the strains appearing in all five plots, the average percent of disease of the five strains showing the highest yield was 5.2%. The average percent of disease for the five lowest yielding strains was 8.1%

The third and last field record taken was the yield record. The average yields of the five plots on Eastern Shore have been computed in terms of barrels per acre and are given below. The number in parenthesis directly after the name of each strain denotes the number of plots in which that particular strain occurred.

AVERAGE OF ALL PLOTS

Source of Seed		Yield - Barrels Per Acre		
		Primes	Seconds	Total
N.Y.-Wilcox & Jones	(5)	100	15	115
Vt.-Joslyn	(5)	98	11	109
Vt.-Lapierre	(5)	90	10	100
Ont.-Cassin	(5)	88	11	100
S. Dak.-Scur	(5)	87	13	100
N. D. - Hoy	(5)	86	11	97
Md.-Eastern Shore	(5)	86	9	95
N.Y.-Rogers	(5)	86	11	97
S. Dak.-Hoffin	(5)	84	13	97
Me.-Carlton	(5)	80	13	93
Me.-Home Grown	(5)	78	10	88
Wis.-Zalenski	(5)	78	15	93
P. E. Island	(5)	78	13	91
N. Dak.-Enfield	(5)	75	13	88
S. Dak.-Home Grown	(5)	71	10	81
P. E. I. Home Grown	(5)	67	9	76
N. Y.-Hollenbeck	(4)	100	11	111
N. Y.-Neal	(4)	98	11	109
N. D.-Burnham	(4)	89	10	99
Wis.-Jacobsen	(4)	87	14	101
Mich.-Robinson	(3)	91	11	102
Wis.-Prosser Bros.	(3)	88	13	101
Minn.-Loftin	(3)	84	10	94
Me.-Prescott	(3)	83	13	96
Stem Ends	(2)	85	11	96

Considering the strains that occurred in all five plots these figures show a yield in prime ranging from 67 to 100 bushels per acre. The average yield was 82 bushels per acre. The variation in yield ranging from 15 bushels below the average to 18 bushels above the average is due primarily to the source of seed. The value of good seed is thus strikingly emphasized.

As in the past Certified seed outyielded Home Grown seed. For the purpose of comparison, the yields of Certified seed and Home Grown seed for 1929 are tabulated below. These yields are taken from the "Average of All Plots" given in this report.

Source of Seed	Yield - Barrels Per Acre		
	Prime	Seconds	Total
Maine - Cerlies	80	15	95
Maine - Home Grown	76	10	86
P. E. Island	75	12	87
P. E. Island Home Grown	67	9	76
S. Dak.- Sour	87	13	100
S. Dak.- Home Grown	71	10	81

In every instance, Certified seed outyielded the Home Grown seed originally obtained from the same source. The difference in favor of Certified seed in prime per acre ranges from 2 to 15 barrels with an average difference of 8.6 barrels. In total yields, the range in favor of Certified seed is from 5 to 19 barrels per acre with an average increase of 11.6 barrels. The reason for this difference in yield is largely a matter of the disease present in Home Grown seed. Thus, the average percent of disease present in the Certified strains listed above was 4.79%; while for the Home Grown seed given above, it was 11.39%. The disease present also influences the germination. Thus the Certified strains showed an average of only 1.89% missing hills while the average for the Home Grown strains was 2.08%.

That this relation of disease and yield in Certified seed versus Home Grown seed holds true over a period of years is brought out by the following table. The figures used in this comparison are an average of the past four years.

Source of Seed	% of Disease	Yield - Barrels Per Acre
P. E. I. Certified	1.12	79
P. E. I. Home Grown	6.32	71
Maine Certified	2.91	88
Maine Home Grown	10.60	87
South Dakota Certified	2.04	85
South Dakota Home Grown	4.15	77

A study of these figures reveals the parallelism of this relation -- high disease versus low yield. Certified seed in every instance showed less disease and a greater yield than Home Grown seed of the corresponding strain. The Certified seed showed a range from 2.1% to 7.0% with an average of 5.1% less disease than Home Grown seed and yielded from 8 to 14 barrels more potatoes per acre. The average increase in yield in favor of Certified seed was 12 barrels per acre. Thus the Source-of-Seed Demonstrations are slowly combatting the persistent belief on the Shore that Home Grown seed outyields Certified seed.

To picture more strikingly this fact to the grower, the disease-yield relationship was made the subject of the Keller and State Fair exhibits. Placards showed the various percentages of disease present in the Source of Seed Plots in both Certified Seed and Home Grown Seed from Maine, South Dakota, and Prince Edward Isle. These three sources were chosen because over a period of years they have proved to be the highest yielding strains. Yields were given for these same strains and were represented by piles of potatoes arranged in barrel heaps. The point forced home to the grower was that one of two things was essential for high unit production -- the use of Certified seed or regueing their fields of Home Grown seed.

Pest Control. The control of potato pests in eastern Virginia is largely a matter of good seed and proper cultural practices. This point has been demonstrated time after time by the Source-of-Seed Demonstration Plots. The plots this year but added to the proof already existent.

The potato Tuber Moth caused relatively little concern this year due largely to weather conditions.

Four seed treatment plots were included with the Source-of-Seed Demonstrations. The averaged results follow:

Seed Treatment	Yield - Barrels Per Acre	
	Primes	Seconds
Dipdust	51	6
Semesan	55	5
Corrosive Sublimate	48	7
Check	52	6

The above treatment was given Certified seed. No benefits resulted from the treatment. Corrosive Sublimate treatment apparently reduced the yield 4 barrels per acre and Dipdust, 1 barrel per acre. The Semesan plot yielded 1 barrel per acre more than the check. None of these differences, with the possible exception of

ATTEND THE FOLLOWING:

New Jersey Seed Potato Conference, June 24th and 25th
Long Island Potato Tour, June 26th, 27th and 28th

Sixth and Seventh Annual

Potato Tours

Accomack County, Virginia
Worcester County, Maryland

June 20 and 21, 1929

...on the...

"Peninsula of Plenty"

PURPOSE:

To bring about a better understanding between the seed producer, the dealer, the farmer who grows table stock from them and related agencies, also to observe and study potato demonstrations and experiments.

Extension Service of Virginia, and Maryland, Eastern Shore of Virginia and Maryland Experiment Stations and Worcester County Farm Bureau Cooperating

1929 - - Program - - 1929

Seventh Annual Tour
Accomack County, Va.
Thursday, June 20th

NORTHERN SECTION

9:00 A. M.—Assemble Martin Hall's Farm near Horsey, explanation and examination of Seed Source Demonstration.
Inspect concentrated Fertilizer Experiments. Explained by Dr. G. V. C. Houghland of Bureau Chemistry & Soils U. S. Dept. of Agr.

10:30 A. M.—Inspect Seed Source Demonstration and Seed Treatment test at R. Finney Mason's Farm south of Mappsville.

11:45 A. M.—Arrive at Eastern Shore Experiment Station.

SOUTH SECTION

9:30 A. M.—Assemble at H. L. Turner's Plat at Painter. Discussion, Inspect Seed Source and Seed treatment plat.

10:30 A. M.—Inspect Geo. C. Bonniwell's plat one mile west of Pungoteague.

11:45 A. M.—Arrive Eastern Shore Experiment Station.

12 O'clock—Dinner and refreshments served by ladies of Onley Community League.

1:15 P. M.—Address of Welcome—T. C. Johnson, Director.
The Agricultural Situation—Dir. J. R. Hutcheson.
Potato Marketing Problems—A. E. Mercker, Executive Secretary Interstate Early Potato Committee.
Addresses—By other visitors.

3:15 P. M.—Inspection of Demonstrations and Experiments.
Irish Cobbler Strain tests.
Irish and Sweet Potato Irrigation tests.
Sweet Potato Fertilizer tests.
Triangulation Fertilizer work on Irish potatoes, sweet potatoes and corn. No stable manure or woods mould used in 11 years. Humus derived from cover crops only.
Nitrogen, Potash and High Analysis Fertilizer tests on Irish potatoes. U. S. D. A. cooperating.
Strawberry variety tests in an effort to get a berry of superior qualities.
Onion experiment to determine best fertilizer analysis. 7-6-5 Fertilizer Brand test.
Mexican Bean Beetle control experiments.
Every Eastern Shore farmer should have 1 acre of alfalfa for each two horses or mules.

4:30 P. M.—Inspect Potato Harvesting regions of Flax experiments and Fields.

6:30 P. M.—Banquet.

Sixth Annual Tour
Worcester County, Md.
Friday, June 21st

8:30 A. M.—Assemble at the farm of W. T. Pilchard on Virginia Road 1 mile south of Pocomoke. Inspection of Cobbler seed source demonstrations.

9:30 A. M.—Inspection of Maryland 1928 certified seed plots at the farm of A. F. Pilchard on the Stockton road 2 miles below Pocomoke. Dr. R. A. Jehle, Extension Pathologist, will discuss 1929 plans for certification.

10:30 A. M.—Stop at the farm of J. G. Hill, Stockton, inspection of Irish Cobbler seed source plots.

11:15 A. M.—Inspection of seed piece size demonstration at the farm of E. E. Nock, 1 mile east of Stockton. Mr. Thomas White of the Md. Experiment Station will address the tour on the subject of "What size seed piece should we plant."

12:00 M.— Inspection of Cobbler seed source demonstration at the farm of F. J. Dukes & Bro., ½ mile west of Girdletree.

12:30 P. M.—Dinner served by Girdletree 4-H Club members at the farm of F. J. Dukes & Bro, Girdletree.

1:30 P. M.—Dr. T. K. Wolfe, Editor of the Southern Planter, Richmond, will address the tour on "A New Day for Potato Farmers."
Mr. A. E. Mercker of the U. S. Dept. of Agriculture and secretary of the Inter-State Early Potato Committee will discuss "The Potato Situation for 1929-1930."
Addresses will be made by other visitors at this stop.

2:30 P. M.—Potato disease detection contest. Eastern Shore potato growers attending this tour will be given an opportunity to enter the contest.

3:15 P.M.—Visit experimental plots at the farm of Jerome Johnson, north of Snow Hill. These plots will show the effects of green manures; of various forms of nitrogen, potash and phosphorus; the application of various amounts; the effect of different analysis of fertilizers and concentrated fertilizer on both white and sweet potatoes.
Dr. J. E. Metzger, University of Md., will discuss "Value of Soil Organic Matter in Potato Growing."

3:45 P. M.—Distribution of 3 barrels of tuber unit Cobbler seed to contest winners. Seed donated by: Michigan Potato Growers' Exchange, Cadillac, Mich.; Fred Corliss, Sherman Mills, Maine, and Charles Lanphierd, Midland, Mich.

Make Yourself At Home **Ask Questions** **Come Again**

Corrective Substance, are significant. These results would seem to agree with the present trend of experimentation, which discounts the value of seed treatment when certified seed is used. This department, therefore, is stressing the treatment of home grown seed whenever used, and certified seed only when planted for certification. The above work was primarily informative.

Cultural Practices. Cover crops to enrich the humus content of the soil have been recommended. High grade fertilizers of the proper analysis have been stressed. 5-7-5 open formula fertilizer recommended by the Virginia Truck Experiment Station is now one of the chief fertilizers used. Clean cultivation has been stressed with particular emphasis upon the value in the control of insects and diseases.

Potato Tour. The Seventh Annual Potato Tour of Accomack County was held June 20, 1929 in conjunction with the Sixth Annual Potato Tour of Worcester County, Maryland held on June 21, 1929. The joint tour was conducted by the Extension Service of Virginia and Maryland, Eastern Shore of Virginia and Maryland Experiment Stations, and Worcester County Farm Bureau Cooperating. The purpose of the tour was "to bring about a better understanding between the seed producer, the dealer, the farmer who grows table stock from them and related agencies, also to observe and study potato demonstrations and experiments". Around 800 people attended the Virginia Tour and around 150 the Maryland Tour. The attendance was made up of growers, certification officials from various states and Canada, fertilizer men, dealers, etc. The tour is gaining in interest yearly and in the writer's opinion is well worth the considerable time and energy that is devoted to making it a success.

2. The Production of Potatoes in Other Parts of the State

The potato grower everywhere faces pretty much the same production problems. Practically the same aid was given throughout the State, therefore, as in Eastern Virginia.

Meetings. Several meetings were attended at the requests of the county agents.

Demonstrations. Demonstrations were given in the various phases of production according to the need of the county in which the work was conducted. Among the factors stressed were good seed, seed treatment, fertilization, pest control, grading, storage and other cultural practices.

4-H Club Work. Some excellent club work was done during the past year particularly in Alleghany County. Work was done in this county with 9 Potato Clubs having a total enrollment of 70 members. The potatoes were treated under the supervision of the County Agent or Specialist. High grade fertilizer (5-8-5) was used at the

rate of 1000 pounds per acre. All plots were sprayed with Bordeaux to control blight. A Vegetable Specialist visited the county several times to work with the project members. The individual plots of the 4-H Potato Club Members ranged from 1/16 acre to one acre, with an average size plot of 1/8 acre. The yields ranged from 72 bushels per acre to 365 bushels per acre. Accurate records were kept by the Club members. A brief summary of the work is given in the following table:

Location of Club	No. of Members	Acres Planted	Total Yield in Bu.	Total Value	Total Cost	Total Profit
Boiling Spring	27	2-5/8	[illegible]	$914.84	$255.58	$661.06
Callaghan	4	1/4	55	79.00	25.55	53.45
Nicely	7	9/16	115	210.00	63.80	146.20
Dark Hollow	6	3/4	175	325.00	80.46	244.54
Roaring Run	12	2-5/8	455½	715.75	235.99	479.76
Sharon	5	1-1/2	382½	561.25	103.40	457.85
White Rock Gap	2	1/8	25	50.00	13.00	37.00
Barber	7	7/8	185	336.40	85.98	250.42
Hunter	7	11/16	161½	250.00	63.12	186.88
Total	75	9-3/4	2018¾	3449.04	919.88	2529.16
Average			207	353.74	94.34	259.40

From the above it may be seen that the club members secured an average yield of 207 bushels per acre valued at $353.74. The average cost of production per acre was $94.34, leaving an average net profit per acre of $259.40. The average profit per club member was $33.72. In addition the club members took $44.00 in prize money at fairs. Such a record speaks for itself. These 75 club projects are in reality demonstrations which will do more to stimulate proper methods of potato production than any amount of adult work. The effects of past years' club work along this line are already bearing fruit in the improved practices adopted by the fathers of the club members.

Corn and Grain Show. An exhibit of certified Irish and Sweet potatoes was put on at the Corn and Grain Show held in Leesburg. The leading varieties of both Irish and Sweet potatoes grown in Virginia were used. Attendance at this show consists largely of men who are interested in good seed. Since potato certification has been under the Crop Improvement Association for only two years, this has been the second year that potatoes were included in the exhibits. Considerable interest was shown in this latest addition to this show.

A FEW PICTURES OF THE FOOTBALL PROGRAM

Runners at Source-of-Cost Demonstration Plots

Explaining Seed Demonstrations to Growers

Field Grown for Certification

Fertilization Demonstration

4-H Club Girls' Potato Project

5. The Production of Certified Seed Potatoes

The certification of Irish potatoes is a cooperative project between the Vegetable Extension and the Virginia Crop Improvement Association. The personnel of the Vegetable Extension does all the inspection work and forwards their reports and recommendations to the Secretary of the Virginia Crop Improvement Association who issues the actual certification to the grower. Certification was limited to the Green Mountain variety.

Rules and Regulations Governing Certification. No changes were made during the past year in the rules and regulations governing certification.

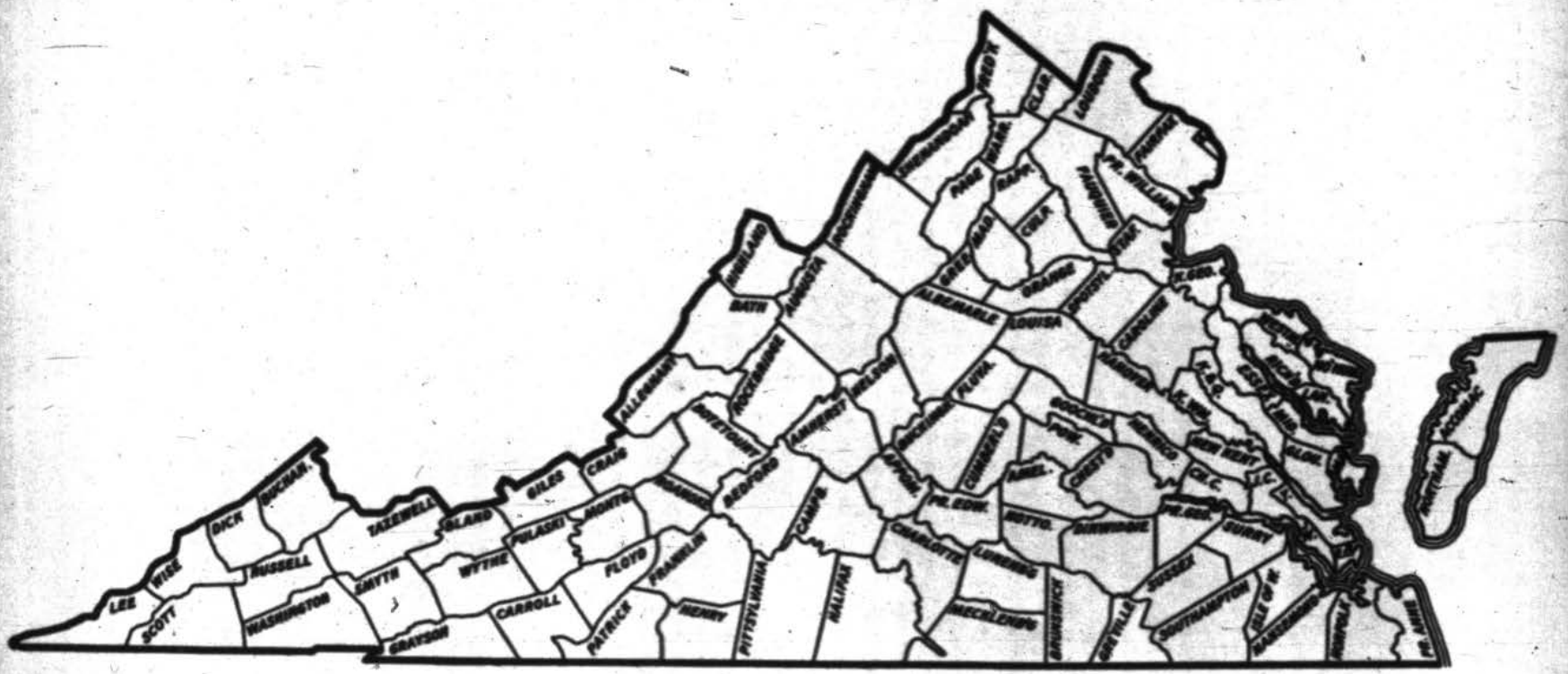
Inspections. Two field inspections were given the potatoes given for certification. In addition those passing both field inspections received a tin inspection.

Demonstrations. The growers were given the same cultural aids as were the growers in other sections of the state. In addition, special demonstrations were given in pest control, rogueing, grading, etc.

Seeds of the Seed. In 1938, 1500 bushels were eligible for inspection. Due to the wet fall, however, these had to be graded down so closely that only 385 bushels were certified. During the past year certification work was carried on in Giles, Alleghany and Rockbridge counties. Twenty-three and one-half acres were grown for inspection. Fourteen and one-half acres in Rockbridge and Alleghany counties were turned down because the growers failed to comply with the regulations governing disease control. Nine acres in Giles County passed the two field inspections and graded out 1900 bushels of certified seed. All of the seed was sold to the Virginia Seed Service at five dollars per bag, bringing a total of $9500. That part of the crop graded out was sold on the open market for table stock.

SWEET POTATO PROJECT

The sweet potato grower was also able to market his crop at a profit this year. Altho the production per acre, estimated at 130 bushels, was 5 bushels below that of 1938, the prices received by the commercial grower averaged higher than last year. The industry in Virginia has returned for the past ten years an average value of over five million dollars. Virginia ships more sweet potatoes than any other state in the Union. This year the state had a total acreage of 44,000 with an estimated production of 4,304,000 bushels. The production per acre, however, is woefully low, only 125 bushels according to the ten year average. This yield can be raised considerably where proper cultural



Counties Visited in Sweet Potato Project.

methods are followed. For that reason the Vegetable Extension Service is stressing the use of good seed, seed treatment, proper fertilization, pest control, etc.

Work in the Sweet Potato Project falls within three divisions:

1. Certified Seed Production
2. Crop Production
3. Storage House Construction

During the past year, sweet potato work has been done in 18 counties. L. J. Bammer, Assistant Vegetable Specialist, was made responsible for this project. Some considerable work has been done in this project by the writer, but, in so far as possible, the planning and management of this project was left to Mr. Bammer.

1. Certified Seed Production

One of the most difficult problems faced by the sweet potato grower is to find a source of good seed. Poor seed spells ruin thru low production, disease, and poor storage qualities. Good seed spells success. The certification project has been of tremendous value to the Virginia growers in supplying this seed. A brief statement of the number of bushels of sweet potatoes certified in this state since the work began will serve to emphasize this fact.

Sweet Potato Certification Data

Period	Virginia's Production of Certified Seed in Bushels	Virginia's Approximate Requirements for Bedding in Bushels
1932 - 1933	11,497	132,000
1933 - 1934	13,775	125,000
1934 - 1935	8,908	111,000
1935 - 1936	7,042	129,000
1936 - 1937	6,962	139,000
1937 - 1938	14,072	132,000
1938 - 1939	10,685	150,000

Thousands of acres have been grown from this seed and thousands of additional acres from seed only one or two years removed from certification. Nevertheless, there is room for a tremendous increased production of certified sweet potatoes as a glance at the column headed "Virginia's Approximate Requirements for Bedding" will show. At present sufficient certified potatoes are grown to bed approximately only 10% of the state's crop. As the source of good seed increases, so fast and so fast only will the state's production of sweet potatoes per acre be increased.

The actual certification of sweet potatoes is a cooperative project between the Vegetable Extension Service and the Virginia Crop Improvement Association. All inspection work was done by this office and certification was issued by the latter agency mentioned.

Rules and Regulations Governing Certification. No changes were made during the past year in the rules and regulations governing certification.

Demonstrations. Demonstrations were given the growers of certified seed in seed selection and treatment, roguing, harvesting, grading, storage house management, and other cultural practices. Our recommendations to the growers were those found most suitable for this crop by the Virginia Truck Experiment Station.

Scope of Work. During 1939, certification work was done with 6 growers in 5 counties - Accomack, Northampton, Southampton, Chesterfield and Hanover. The total acreage grown for inspection was 133-1/2.

One thousand three hundred sixty-one bushels of sweet potatoes were treated and bedded by growers of certified seed working under the supervision of this office.

Three separate inspections were given; namely, Seed Bed, Field and Bin. The seed beds were inspected primarily for Black Rot, Soft Rots and general condition of the plants. The fields were inspected for varietal mixture and Blue Stem. Attention was also given in field inspections to the general condition of the fields, freedom from weeds, etc. The potatoes were inspected in the bin for Black Rot and Storage Rots. The inspection work of this department entailed a total of 38 bed inspections, 35 field inspections and 12 bin inspections.

Eleven thousand one hundred sixty-five and one-half bushels of sweet potatoes were eligible for inspection and of this number 10,065½ bushels were certified.

B. Crop Production

The grower of table stock was given much the same aid as was the certified grower.

Meetings. On January 30, a conference was held at the Virginia Truck Experiment Station relative to the control of black rot of sweet potatoes. This conference was attended by County Agent H. W. Cobb, the staff of the Virginia Truck Experiment Station, Drs. Myers and Lawrencecon of the U. S. Department, and the Vegetable Extension Specialists. A definite program was outlined at this meeting to aid the growers in combating this serious disease of sweet potatoes. The points emphasized were:

1. Seed selection
2. Seed treatment
3. Proper selection of plant bed
4. Crop rotation
5. Bedding
6. Care in harvesting
7. Proper methods of storage

Meetings were held at several points later in order to bring this program to the attention of the growers. In all, six meetings were held with a total attendance of 218. At these meetings the above program was stressed.

Demonstrations. Eighty-six demonstrations were given relative to the cultural practices of the crop. These included demonstrations on seed selection, treatment, bedding, drawing, rogueing, pest identification and control, storage house management and fumigation, etc. Attendance at these demonstrations was 165.

Two fertilizer demonstrations were run in Princess Anne County in cooperation with Mr. W. L. Myers of the N. Y. Potash Association. Records of the demonstrations are given below:

Dudley Sweet Potato Fertilization Demonstration

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	4 - 8 - 4	800 lbs.	180 bu.	$180.00
2	4 - 8 - 12	800 lbs.	190 bu.	190.00
3	4 - 8 - 20	800 lbs.	197½ bu.	197.50

The above demonstrates the high potash requirements of the sweet potato crop. 12% potash resulted in an increase of 20 bushels per acre over 4%, with an increased value per acre of $20.00. 20% potash resulted in an increase of 27½ bushels per acre over 4%, with an increased value per acre of $27.50. It is worthy of note, however, that 20% potash yielded 2½ bushels per acre less than 12%. In brief, there comes a point where potash fails to increase the yield. The point no doubt varies with soil types.

Brock Sweet Potato Fertilization Demonstration

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	4 - 8 - 4	800 lbs.	268 bu.	$268.00
2	4 - 8 - 12	800 lbs.	276 bu.	276.00
3	4 - 8 - 20	800 lbs.	266 bu.	266.00

The results in the above demonstration are almost identical with the Dudley demonstration. 12% potash resulted in an increase of 18 bushels per acre over 4%. 20% yielded 8 bushels more per acre than 4%. Here again, however, 20% yielded 10 bushels less than 12%. The soil type was the same for both demonstrations.

Circular Letters. One circular letter on storage house fumigation was distributed in Princess Anne County.

5. Storage House Construction

Storage house work was carried on in several counties during the past year. Actual construction, however, was limited to two counties - Princess Anne and Dinwiddie. Five new houses were constructed with a total capacity of 10,000 bushels. An additional room of 1,000 bushels capacity was added to the Petersburg house. Of the five new houses constructed, three were of wood and two of cinder block construction. The cinder block type of house is just as satisfactory as the frame house and this type of construction will be encouraged where lumber is high. The cinder block houses with a capacity of 2,000 bushels were constructed this year at an average cost of $1,100. Frame houses in the same community cost $1,200. An additional advantage of the cinder block house is the lower upkeep.

A brief review of the storage house project might well be taken. The project has now ended its FIFth year. During that time 45 storage houses have been constructed under the actual supervision of this office. These houses are located in 10 counties and have a total capacity of 112,100 bushels. Practically all of these belong to the home storage class.

Princess Anne County. The work in Princess Anne County deserves particular mention. A total of 26 houses have been constructed in this county since the work started. An average of 5 houses per year is an excellent showing and speaks well for the way in which the county agent has followed up this project. The capacity of the houses has ranged from 1,000 to 2,500 bushels. The county agent has organized the house owners into The Princess Anne Sweet Potato Association. The association markets its potatoes under a patented brand - "Princess Cured Brand" - and the agent is impressing on them the importance of keeping this brand up to an A 1 grade. Approximately 40,000 bushels of sweet potatoes for table stock and 2,000 bushels for seed purposes have been stored in these houses this fall. The potatoes will all be marketed in Norfolk. One commission house handles approximately 75% of the total output. Last year the potatoes received a premium of over fifty cents per bushel above bank stored stock. The price this year should be just as good, if not better. The premium value alone, therefore, over bank stored potatoes should net the association members around $20,000.

Storage House Visits. An attempt was made this year to follow up the sweet potato house management problems. In so far as possible all the houses constructed under the supervision of this office were visited. Practically all the houses were giving complete satisfaction. In the few instances where trouble was being experienced the fault was found to be caused by diseased stock, harvest injury, etc. In no case was the house at fault. Proper storage of sweet potatoes first requires sound stock, carefully handled. With these two factors properly taken care of, good storage becomes a matter of relative ease.

A FEW PICTURES OF THE SEED POTATO PROJECT

Field Grown for Certification

Field Poorly Cultivated

Correct vs. Wrong Method of Fertilizer Application

Courtesy Eastern Shore Experiment Station

Harvesting Sweet Potatoes

Frame Sweet Potato Storage House

Cinder Block Sweet Potato Storage House

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A & M College & Poly. Inst. & U.S.D.A. Cooperating
EXTENSION SERVICE

Blacksburg, Va.
August 23, 1929.

To All Sweet Potato Storage House Owners:

It is now time to think of disinfecting or fumigating your sweet potato storage house. A systematic cleanup of all dirt, culls and rotten sweet potatoes in the house before it is treated will go a long way in controlling diseases.

In disinfecting your storage house, you can use one of the following methods:

1. Formaldhyde, 3 pints.
   Potassium permanganate, 23 oz. for every 1000 cubic feet of space.
2. Corrosive sublimate, 2 oz, dissolved in 8 gallons of water.

If potassium permanganate is used, it should be placed in an earthenware or tin container at least two feet deep, as a good deal of heat is thrown off when the potassium permanganate is dropped into the formaldhyde. Care should be taken not to have any inflammable material close to the container when fumigating the house. All ventilators should be closed in the house before it is fumigated. If crates are used, they should be stored in the house before fumigating.

The cost of formaldhyde is approximately $2.25 a gallon. The cost of the potassium permanganate is $1.45 per 5-lb. can.

If corrosive sublimate is used, spray the house inside until the floors and walls are damp; if crates are used to store the sweet potatoes, spray the crates well before they are taken into the house. This can be done at any time before the sweet potatoes are stored, however, the quicker the better. The cost of corrosive sublimate is approximately 20¢ per oz.

If you wish me to help you disinfect your sweet potato storage house, write me by return mail.

Yours for better storage this year.

H. W. Ozlin
County Agent

The house management problems will also be followed up next year as the greatest advertisement for the storage house project is a satisfied owner.

Storage House Plans. Seventeen storage house plans were sent out to various growers requesting them. Credit was taken for no house constructed, however, unless actual work was done with the grower. Part of the sweet potato exhibit at the State Fair this year featured storage. Several plans were sent out as a result of this exhibit and aid will be given the growers who construct houses.

TOMATO PROJECT

The tomato industry returns to the state an annual income of around half a million dollars. This year, 1,500 acres of tomatoes were grown for table use and 6,840 acres for manufacture. On this acreage were produced 220,000 bushels of table stock and 14,400 tons for manufacture. The average yield per acre, however, is low -- only 132 bushels for table stock and 2.4 tons for manufacture. With proper cultural practices these yields could easily be doubled and the value of the industry to the state increased a half million dollars annually without any increase in acreage. The potential value of the industry and the low yield per acre were the two determining factors which influenced this department to continue the tomato crop as a major project.

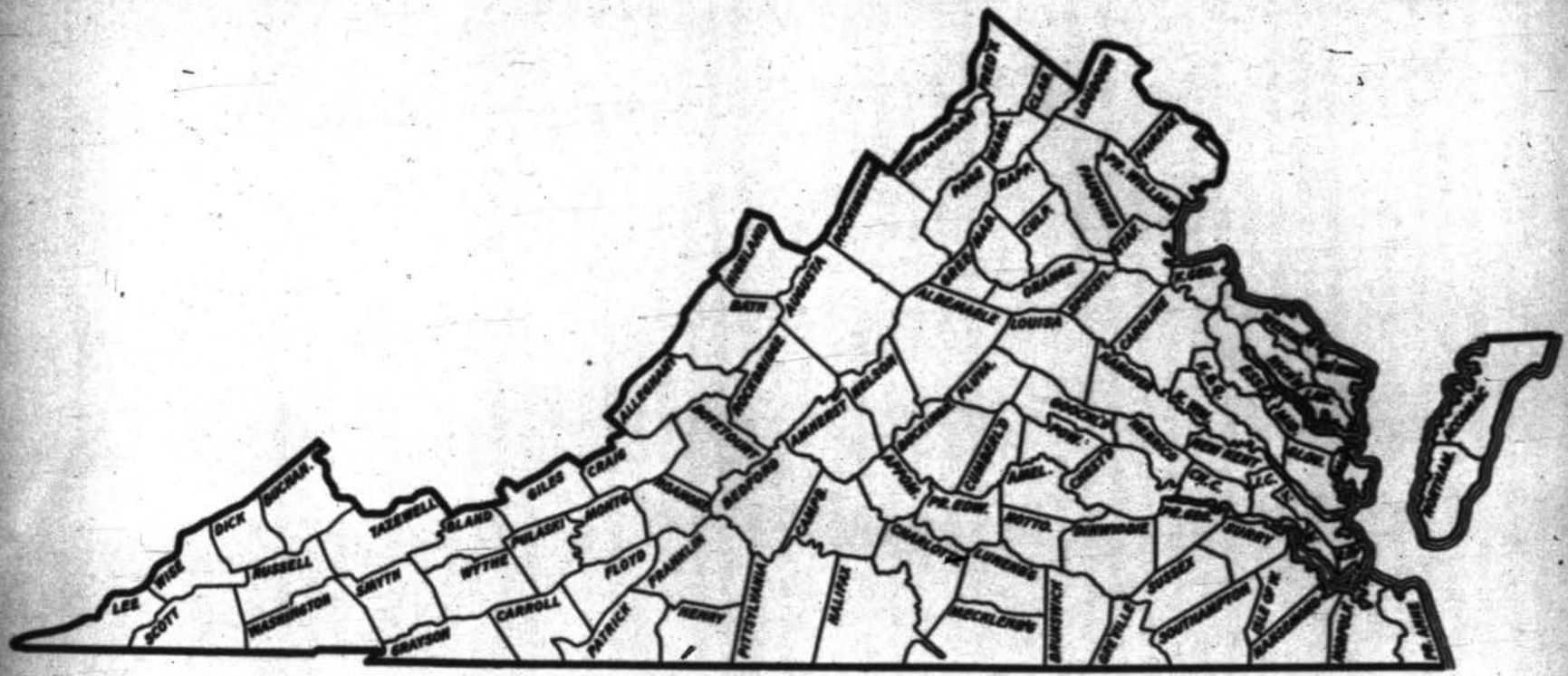
Work in the Tomato Project is concerned with both types of tomato production mentioned above:

1. The Production of Tomatoes for the Cannery
2. The Production of Market Tomatoes

Tomato project work was done in 10 counties during the past year. Seven meetings were held with a total attendance of 276. The various phases of the work will be discussed under each sub-project.

1. The Production of Tomatoes for the Cannery

The grower of canning tomatoes received a somewhat better price this year for his tomatoes than last. Prices ranged from 20 to 30 cents per five-eighths bushel basket as against 12½ to 20 cents last year. This price increase was largely a reflection of the poor crop of 1928. The canner made some money on the 1928 pack. With the tomato crop under the contract system, the grower is always a year late in receiving any economic price adjustment. The acreage for the state was 6,840, an increase of 14% over that of 1928 but a decrease of 27% from the five year average. The acreage was still only 43% that of the 1925 crop, the year of over production throughout the entire country. In 1926 and 1927 the acreage in Virginia dropped tremendously. Since then, however, there has been a general tendency to increase the acreage. This tendency has been discouraged as the tomato acreage for the country, at least for the present, has reached the saturation point for consumption. Any great increase, therefore, must work to the detriment of the grower.



Counties Visited in Tomato Project.

The average yield per acre for the canning crop was 5.9 tons. Altho this yield is for two ler it is nevertheless almost a ton above the five year average. There is no call at the present time for acreage expansion, but there is room for considerable improvement within the industry as the above yields testify. This department has been striving to bring about this improvement. Various methods were used to increase quality production.

Meetings. Seven meetings were held with an average attendance of 30. The meetings emphasized the problems peculiar to the grower of canning tomatoes. The following points in particular were stressed: good seed, community plant beds, cultivation, soil improvement crops, fertilization, and pest control.

For the second time in two years the Vegetable Specialist has had the opportunity of addressing the annual meeting of the Virginia Canners' Association. The meeting was held this year at the Patrick Henry Hotel, Roanoke, Virginia, on February 13 and was attended by 150 canners, fertilizer men, can company representatives, etc. An excellent program was put on at this meeting and the interest was high. The writer spoke on "Ways the Canner Can Be of Service to the Grower". The fact was stressed that any help given to the grower by the canner naturally reacted to the benefit of the canner himself. The canner was urged to supply only the best seed obtainable to his growers and to advise them on proper methods of fertilization, cultivation, etc. Where the grower followed his advice and produced high quality fruit it was pointed out that the canner should be willing to pay a premium to this grower. A representative of the National Canners' Association spoke on "Organization Activities" and Mr. Rabbeagh, formerly of the Maryland University Extension Division, talked on "Some High Points in the Tomato Industry".

Community Plant Beds. As in the past, one of the chief methods of improving the canning crop is the Community Plant Bed. Twenty-three such plant bed sites were selected and planted in Westmoreland, Lancaster and Northumberland counties in 1939. The beds ranged from one-sixteenth of an acre to one-half an acre in size. They were well distributed in order that their demonstrational value might be greatest. Each grower was aided in selecting the plant bed site and in all cultural requirements from the time of sowing the seed until the plants were ready for the field. Numerous demonstrations were given in land preparation, fertilization, seeding, mulching, cultivation, thinning, pest control, pulling and planting. Both the County Agent and the Specialist kept in close contact at all times with the plant bed grower.

Some of the outstanding benefits derived from these beds are listed below:

1. Better plants were available in the communities where the beds were located than would have been otherwise. Pest control, for the canning tomato crop, is largely a matter of seed bed management.

The plant beds served as excellent demonstrations of this fact.

2. A total of 707,000 plants were sold from the supervised plant beds or were used by the growers themselves. In other words, sufficient plants were grown to set approximately 970 acres or 4% of the total acreage of the state. Sufficient plants were grown in the Lancaster County beds to set approximately 20% of the county's acreage; in Westmoreland County beds to set 10% and in Northumberland County to set 6%. The widespread influence of the beds can thus be seen.

3. The beds have tremendously increased the sale of insecticides and fungicides within these counties.

4. As in the past, however, the chief value of these beds is that they serve as examples or demonstrations in proper methods for other growers. Scores of growers are adopting plant bed practices and benefiting from these demonstrations.

Good Seed versus Poor Seed. Whenever opportunity offered, this department has sought to influence growers to purchase good seed for their growers. This point has always been stressed with the community plant bed demonstrations. Sources of excellent seed were pointed out to the county agents in the various tomato growing counties. The grower is thus gradually being influenced to realize the importance of good seed.

Cultural Practices. The same demonstrations in cultural practices must be given year after year. Proper crop rotations and proper fertilization have been stressed. Demonstrations particularly with the plant bed growers were given in the various cultural practices. Particular emphasis was laid upon proper methods of transplanting and cultivation.

Pest Control. The longer a locality remains in the tomato game, the more is the disease problem accentuated. The control of field pests with the growing crop, however, is attained primarily thru proper measures in the plant bed. For this reason actual demonstrations of this nature have been limited rather largely to community plant bed growers. Each of these beds was dusted several times with Bordeaux dust under the supervision of the County Agent or the Specialist.

Fusarium wilt, however, does not respond to dust treatments. This disease must be attacked from the seed angle. This department has been instrumental in introducing several pounds of the wilt-resistant tomato, Marglobe, into the tomato sections of the state. The need for good Marglobe seed was strikingly brought out by a survey made this year in Lancaster County. In an attempt to check up on the resistance of Marglobe seed from various sources, several fields were visited. The variety was holding up very well where the true Marglobe had been used. The chief problem, however, is with some of the seed

being sold as Marglobe. Several fields were inspected where the seed had all been secured from one particular seedsman. In every case it was found that only about 30% of the plants were Marglobe. The remaining 70% consisted of Stone, Golden Queen, Yellow Pear, Red Cherry and other varieties. Seed from another seedsman showed around 75% true Marglobe. The highest strain of all showed 90% to 95% true Marglobe. The seedsmen are being notified from this office as to the performance of their seed and it is hoped in this way to improve their strains.

Mention should be made of the wilt-resistant tests conducted in the Northern Neck of Virginia by Dr. Frank P. McWhorter, Plant Pathologist of the Virginia Truck Experiment Station. Although the Vegetable Specialists were not directly concerned in these tests, they nevertheless directed the growers' attention to them whenever possible. The results of the tests were striking.

Fertilizer Demonstrations. The average tomato grower underfertilizes. In addition many of them know nothing whatever of the constituents of the goods they use. For that reason, nine fertilization demonstrations were conducted in the canning tomato section. Two demonstrations each were run in Westmoreland, Bedford, and Botetourt counties and three in Lancaster county. The fertilizer for two of these demonstrations was donated by the N.V. Potash Corporation thru the courtesy of Mr. W. L. Myers. The fertilizer for the remaining seven demonstrations was furnished by Mr. George Patterson of the Chilean Nitrate Agency. A discussion of these demonstrations is included in this report. For the purpose of continuity all the demonstrations conducted in cooperation with the Chilean Nitrate Agency will be discussed first. The purpose of these demonstrations was primarily to impress upon the grower the value of a high analysis fertilizer and secondarily to demonstrate the value of topdressing with nitrate of soda. The 8-8-8 used in the demonstrations was an open formula fertilizer mixed according to the recommendations of this office. The check plots were fertilized with the fertilizer used by the individual grower and the amount he was accustomed to use. The results follow:

Glissenpool Tomato Fertilization Demonstration - Bedford Co.

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	4 - 8 - 4	400 lbs.	256 bu.	$102.00
	Nitrate	150 lbs.		
2	8 - 8 - 8	600 lbs.	316 bu.	222.40
	Nitrate	150 lbs.		
3	8 - 8 - 8	600 lbs.	282 bu.	196.20
4	4 - 8 - 4	400 lbs.	218 bu.	134.76

This demonstration was located on the typical mountain soil used for tomato production. The land had not been cleared for 25 years until the present season. The grower took excellent care of the demonstration throughout the entire season. The results of the

demonstration were highly satisfactory. 5-8-5 with nitrate outyielded 5-8-5 alone by 34 bushels per acre with an increased value of $26.35. 4-8-4 with nitrate outyielded 4-8-4 alone by 16 bushels per acre with an increased value of $20.24. 5-8-5 outyielded 4-8-4 by 64 bushels per acre with an increased value of $41.44. 5-8-5 with nitrate outyielded 4-8-4 with nitrate by 62 bushels per acre with an increased value of $39.40. Thus the higher analysis fertilizer plots with or without nitrate outyielded the corresponding lower analysis fertilizer plots. Likewise the nitrated plots outyielded the un-nitrated plots. The most significant feature, however, was that the nitrated plots gave a higher percentage of early tomatoes. This particular grower sold part of his crop on the market and part to the cannery. He was enabled, therefore, to realize a market price of 95 cents per bushel on a greater portion of the crop from the nitrated plots than from the un-nitrated plots. The results of the demonstration would seem to point to the need for such a test plot in the Green Bay section.

Hackworth Tomato Fertilization Demonstration - Bedford County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5	400 lbs.	352 bu.	$281.60
2	5 - 8 - 5	400 lbs.	386 bu.	197.30
	Nitrate	150 lbs.		
3	4½-10 - 8	400 lbs.	352 bu.	190.80
	Nitrate	150 lbs.		
4	4½-10 - 8	400 lbs.	304 bu.	99.60

The soil for this demonstration was very poor and lacking in humus except for a half-acre plot where the lower analysis fertilizer was used. This half-acre had been used as a garden and was in a much higher state of fertility than the other half acre. It was thought best, therefore, to put the higher analysis fertilizer on the poorer half-acre. The yield on all plots was reduced considerably by Blossom End Rot. 5-8-5 with nitrate showed an increase of 36 bushels per acre valued at $14.40 over 5-8-5 alone. 4½-10-8 with nitrate showed an increase of 28 bushels per acre valued at $11.20 over 4½-10-8 alone. In this particular demonstration the high analysis fertilizer did not greatly outyield the low analysis. Thus, 5-8-5 outyielded 4½-10-8 by only 8 bushels per acre; 5-8-5 plus nitrate outyielded 4½-10-8 plus nitrate by 16 bushels per acre. Since the higher analysis fertilizer was used on the poorer soil such an increase was more than was expected. The demonstration was well conducted by the grower and proved highly satisfactory.

Keith Tomato Fertilization Demonstration - Botetourt County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5	1000 lbs.	324 bu.	$60.48
2	5 - 8 - 5	1000 lbs.	268 bu.	138.80
	Nitrate	150 lbs.		
3	0 -10 - 5	1000 lbs.	170 bu.	76.50
	Nitrate	150 lbs.		
4	0 -10 - 5	1000 lbs.	102 bu.	45.90

This demonstration was outstanding. 5-8-5 with nitrate outyielded 5-8-5 alone by 56 bushels per acre valued at $25.20. 0-10-5 with nitrate outyielded 0-10-5 alone by 68 bushels per acre valued at $27.90. 5-8-5 outyielded 0-10-5 alone by 96 bushels per acre valued at $43.20. 5-8-5 with nitrate outyielded 0-10-5 with nitrate by 98 bushels per acre valued at $44.10. These results need no further elaboration. This demonstration demonstrated.

Groves Tomato Fertilization Demonstration - Rockingham County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5 Cl.F*	1000 lbs.	128 bu.	$ 51.20
2	5 - 8 - 5 Cl.F.	1000 lbs.	146 bu.	58.40
	Nitrate	150 lbs.		
3	5 - 8 - 5 Open F**	1000 lbs.	146 bu.	58.40
	Nitrate	150 lbs.		
4	5 - 8 - 5 Open F.	1000 lbs.	126 bu.	50.40

* Closed Formula
** Open Formula

Mr. Groves handled this demonstration in a very good manner. The weather this year, however, particularly in the Northern Neck of Virginia, was exceedingly dry and the yields, therefore, were correspondingly low. 5-8-5 open formula with nitrate outyielded 5-8-5 open formula alone by 20 bushels per acre valued at $8.00. 5-8-5 closed formula with nitrate outyielded 5-8-5 closed formula alone by 18 bushels per acre valued at $7.20. There was practically no difference between the open and closed formula fertilizers. Closed formula 5-8-5 outyielded open formula 5-8-5 by 2 bushels per acre. Open formula 5-8-5 with nitrate yielded the same as closed formula 5-8-5 with nitrate.

Pennington Tomato Fertilization Demonstration - Westmoreland County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5	1000 lbs.	285 bu.	$113.00
2	5 - 8 - 5	1000 lbs.	288 bu.	111.00
	Nitrate	150 lbs.		
3	2 - 8 - 5	1000 lbs.	280 bu.	104.00
	Nitrate	150 lbs.		
4	2 - 8 - 6	1000 lbs.	284 bu.	108.00

This demonstration was well cared for by Mr. Pennington. The results of the demonstration, however, are not indicative in any way. The variations in yields in all instances are so slight as to be within the range of probable error. 5-8-5 with nitrate was outyielded by 2-8-6 alone by 4 bushels per acre valued at $2.00. 2-8-5 with nitrate outyielded 2-8-6 alone by 4 bushels per acre valued at $2.00. The results in these two cases were exactly reversed. 2-8-6 outyielded 2-8-6 by 2 bushels per acre valued at $1.00. 2-8-5 with nitrate was outyielded by 2-8-5 with nitrate by 6 bushels per acre valued at $3.00. A study of the above will show no conclusive evidence in any direction. It is probable that the results in this demonstration are due largely to dry weather which did not give the fertilizer a chance to have its effect. It would be interesting to watch the crop on this piece of land next year and note any differences in it due to the fertilization of the past year. Another possible reason contributing to the results may be that the grower practices a good crop rotation, using a legume crop every three years. It is doubtful if this factor played as great a part as the weather factor, however, judging from the results of other demonstrations under similar conditions.

Ball Tomato Fertilization Demonstration - Lancaster County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	3 - 8 - 3	1000 lbs.	132 3/4 bu.	$ 46.48
2	4 - 8 - 4	1000 lbs.		
3	5 - 8 - 5	1000 lbs.		
	Nitrate	150 lbs.		
4	4 - 8 - 4	1000 lbs.	154 bu.	53.90
	Nitrate	150 lbs.		

Blossom End Rot was severe in all plots. The grower failed to keep records on individual plots, but kept separate records on that portion of the demonstration nitrated and on that portion of the demonstration un-nitrated. The results afford a comparison of nitrate versus no nitrate. The nitrated plots outyielded the un-nitrated by 21 1/4 bushels per acre with an increased value of $7.44. It is

interesting to note the variation in the yields of the two treatments in various pickings. Thus, from August 7 to August 20, the nitrated plots picked 41 3/4 bushels and the unnitrated plots 42 1/4 bushels. From August 20 to August 30 the nitrated plots picked 80 1/2 bushels while the unnitrated plots picked only 69 1/4 bushels. From September 1 to September 16 the nitrated plots picked 31 3/4 bushels while the unnitrated plots picked only 21 bushels. The nitrate increased the number of bushels per picking as the season progressed.

March Tomato Fertilization Demonstration - Lancaster County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5	1000 lbs.	353 bu.	$ 107.30
2	3 -10 - 6	1000 lbs.	354 bu.	101.60
3	5 - 8 - 5	1000 lbs.	359 bu.	108.30
	Nitrate	150 lbs.		
4	3 -10 - 6	1000 lbs.	353 bu.	100.30
	Nitrate	150 lbs.		

5-8-5 with nitrate was outyielded by 5-8-5 alone by 10 bushels per acre valued at $4.00. 3-10-6 with nitrate was outyielded by 3-10-6 alone by 2 bushels per acre valued at $0.80. 5-8-5 outyielded 3-10-6 by 14 bushels per acre valued at $5.60. 5-8-5 with nitrate outyielded 3-10-6 with nitrate by 6 bushels per acre valued at $2.40. The results of the demonstration are not as would be expected. Plots I and III were injured somewhat by large oak trees across the road from the demonstration. The soil was uniform throughout and had received the same treatment for the past four years. The only possible assigned causes for the failure of this demonstration to demonstrate are the weather and a legume crop in the rotation.

The results of the nitrate demonstrations as a whole were very satisfactory. Five of the seven were excellent and spoke for themselves. Two failed to turn out as expected for reasons already discussed under the particular demonstration.

Two potash demonstrations were conducted in the canning section in cooperation with the M.V. Potash Association. The results follow:

Cockrell Tomato Fertilization Demonstration - Lancaster County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5	1000 lbs.	192 1/4 bu.	$ 58.51
2	5 - 8 - 10	1000 lbs.	335 3/4 bu.	102.04
3	3 -10 - 6	1000 lbs.	174 bu.	78.30

This demonstration demonstrated in a remarkable manner the ability of the tomato crop to utilize a large amount of potash.

This office has in the past been recommending a 5-8-5 for the tomato crop. Demonstrations conducted during the past two years, however, would seem to indicate a higher potash requirement for the tomato crop. In this particular demonstration the 10% potash outyielded the 5% potash by 34 1/2 bushels per acre valued at $10.35. Both the recommended 5-8-5 and the 5-8-10 outyielded the grower's fertilizer, 5-10-6; the former by 12 1/4 bushels per acre valued at $3.31 and the latter by 46 3/4 bushels per acre valued at $25.74.

A canning test was run in conjunction with this demonstration to test the influence of potash on quality. In September, three baskets of tomatoes were selected from each plot and taken to the cannery. All the tomatoes were peeled by the same peeler and put up in #2 cans. The 3 baskets from the 5-8-5 plot yielded 40 cans; the 3 baskets from the 5-8-10 plot, 46 cans; and the 3 baskets from the 5-10-6 plot, 37 cans. This difference on an acre basis would be astounding. Even if all plots yielded the same number of bushels per acre, a 200 bushel crop would give the following results:

Plot	Treatment	Assumed Yield per Acre	#2 Cans per Acre	Value *
1	5 - 8 - 5	200 bu.	5,333	$533.33
2	5 - 8 -10	200 bu.	6,133	613.33
3	5 -10 - 6	200 bu.	4,933	493.33

* Figured at 10 cents per dozen

A study of these figures will show that the 5-8-10 plot would yield 800 more cans per acre valued at $80.00 more than the 5-8-5 and 1,200 more cans per acre valued at $120.00 more than the 5-10-6. The results are almost too astounding to accept. Even with no increase in yield from the higher percent potash fertilizer, the canner could afford to buy the high potash fertilizer, donate it to the grower and still come out with an increased profit. Figured on the actual yields from the Cockrell Demonstration, the results, if the canning relations hold true, would be as follows:

Plot	Treatment	Yield per Acre	#2 Cans per Acre	Value
1	5 - 8 - 5	198 1/4 bu.	5,126	$341.73
2	5 - 8 - 10	226 3/4 bu.	6,955	463.33
3	5 -10 - 6	174 bu.	4,292	286.13

Based on actual yields, therefore, 10% potash fertilizer yielded 1,827 more cans per acre valued at $121.60 more than the 5% potash fertilizer, and 2,661 more cans per acre valued at $177.40 more than the 5-10-6. It is realized that the canning tests should be run throughout the entire season and for more than one year to prove

conclusive. Regardless of this, however, the results are so astounding as to point to the need of some definite experimental work in this State on tomato fertilization and its relation to quality and yield of canned goods.

Fitzhugh Tomato Fertilization Demonstration - Accomack Co.

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5 - 8 - 5	1000 lbs.	160 bu.	$67.20
2	5 - 8 - 10	1000 lbs.	178 bu.	68.80

5-8-10 outyielded the 5-8-5 by 4 bushels per acre. The surprising thing about the demonstration, judging from similar tests throughout this State both this year and last, is that the difference is so small.

2. The Production of Market Tomatoes

Virginia's acreage of market tomatoes for 1929 was 1,500, an increase of 15% over 1928. The average yield per acre was 108 bushels, an increase of 8 bushels per acre over 1928 and considerably above the five year average. This yield can be greatly increased, however, by proper cultural methods. Assistance was given to the growers of market tomatoes in some few counties. Most of the work was confined, however, to the Green Hrup section in Northumberland County.

Community Plant Beds. Four community plant beds were located in Northumberland County. The chief function of these beds is to teach the proper plant bed practices. The beds produced 110,000 plants or sufficient plants to set approximately 50 acres.

Fertilization Demonstrations. Two fertilization demonstrations were conducted in Northumberland County. One of these was in cooperation with the N.Y.Potash Association and the other with the Chilean Nitrate Agency. The results follow:

Dameron Tomato Fertilization Demonstration - Northumberland County

Plot	Kind of Fertilizer	Rate of Application	Yield per acre		Value
1	5 - 8 - 5	1000 lbs.	Green Hrupe	96 bu.	$ 34.99
			Canning	216 bu.	97.20
			Total	312 bu.	142.19
2	5 - 8 - 10	1000 lbs.	Green Hrupe	150 bu.	80.97
			Canning	322 bu.	128.80
			Total	472 bu.	209.77

The above demonstration affords additional evidence of the high potash requirements of the tomato crop. The 10% potash out-yielded the 5% potash by 56 bushels of Green Wraps per acre with an increased value of $25.20. The potash apparently did not influence the date of picking as a study of the following table will show:

Picking Period	Yield 5 - 8 - 10		Yield 5 - 8 - 5	
	Bushels	% Total Crop	Bushels	% Total Crop
June 29 - July 4	46	9.7	29	8.9
July 5 - July 15	60	12.7	39	12.5
July 21 - August 2	44	9.1	27	8.6
Total	150	31.5	94	30.0

At first glance, judging from the greater number of bushels from the 5-8-10 plot, it might appear that the potash matured the fruit more quickly. A study of the percent of total crop harvested in the various pickings, however, reveals that the 5-8-5 matured 30% of its crop as Green Wraps and that the 5-8-10 matured 31.5% as Green Wraps.

For that part of the crop sold to the company, the 5-8-10 outyielded the 5-8-5 by 104 bushels per acre valued at $42.60. In total yields the 5-8-10 outyielded the 5-8-5 by 160 bushels per acre valued at $67.58. A higher potash fertilizer therefore would seem to be required both by the Green Wraps and by the Canning crop.

Hall Tomato Fertilization Demonstration - Northumberland County

Plot	Kind of Fertilizer	Date of Application	Yield per Acre		Value
1	2 - 8-20 Open F.* Nitrate	1000 lbs. 190 lbs.	Green Wraps	156 bu.	$174.50
			Canning	80 bu.	46.50
			Total	301 bu.	$221.00
2	5 - 8 - 5 Open F.	1000 lbs.	Green Wraps	196 bu.	196.70
			Canning	62 bu.	44.20
			Total	218 bu.	$240.90
3	5 - 8 - 5 Cl.F.**	1000 lbs.	Green Wraps	147 bu.	122.50
			Canning	56 bu.	36.40
			Total	205 bu.	$158.90

* Open Formula
** Closed Formula

The purpose of this demonstration was to determine whether or not all the nitrogen in a 5-8-5 fertilizer should be applied at once or in two applications and to compare open versus closed formula fertilizers. Plot No. 2 with all nitrate applied at one time, ten days

A FEW PICTURES OF THE SOILED PROJECT

Applying Fertilizer to Plant Bed

Covering Fertilizer in Plant Bed

Tomato Plant Bed - Excellent Stand

Thinning Tomato Plant Bed

Tomato Fertilization Demonstration -- Bedford County
Typical Mountain Tomato Land

Applying Nitrate of Soda to Tomato Demonstration

Tomato Fertilization Demonstration

Green Bay Section

previous to planting, outyielded Plot No. 1 where two applications were made by 50 bushels per acre of Green Crops. Plot No.2, however, yielded 3 bushels per acre less for the opening crop, making the total yield over Plot 1, 17 bushels with an increased value of $16.15. This one test would seem to indicate that the crop requires the entire application of 5# previous to planting. The top dressing of nitrate, however, on Plot 1 was made too late by the agent. It should have been made ten days after planting, but was not applied until fruit had started to set. The open formula, 5-8-5, outyielded the closed formula, 8-8-8, by 15 bushels per acre with an increased value of $8.70

Cultural Practices. Practically the same recommendations were made and help given as in the opening regions.

HOME GARDEN PROJECT

The home garden project has just completed its second year as a major project. Aline it is exceedingly more difficult to measure progress in home garden work than in any of the other projects, nevertheless progress has been made as a discussion of the work will show:

Scope of the Work. Advisory work on home gardens was done last year in practically every county visited by the specialists. Definite aid in garden work was given in 82 counties and 37 counties were actually visited on garden project work by the Specialists. The work was largely of three types:

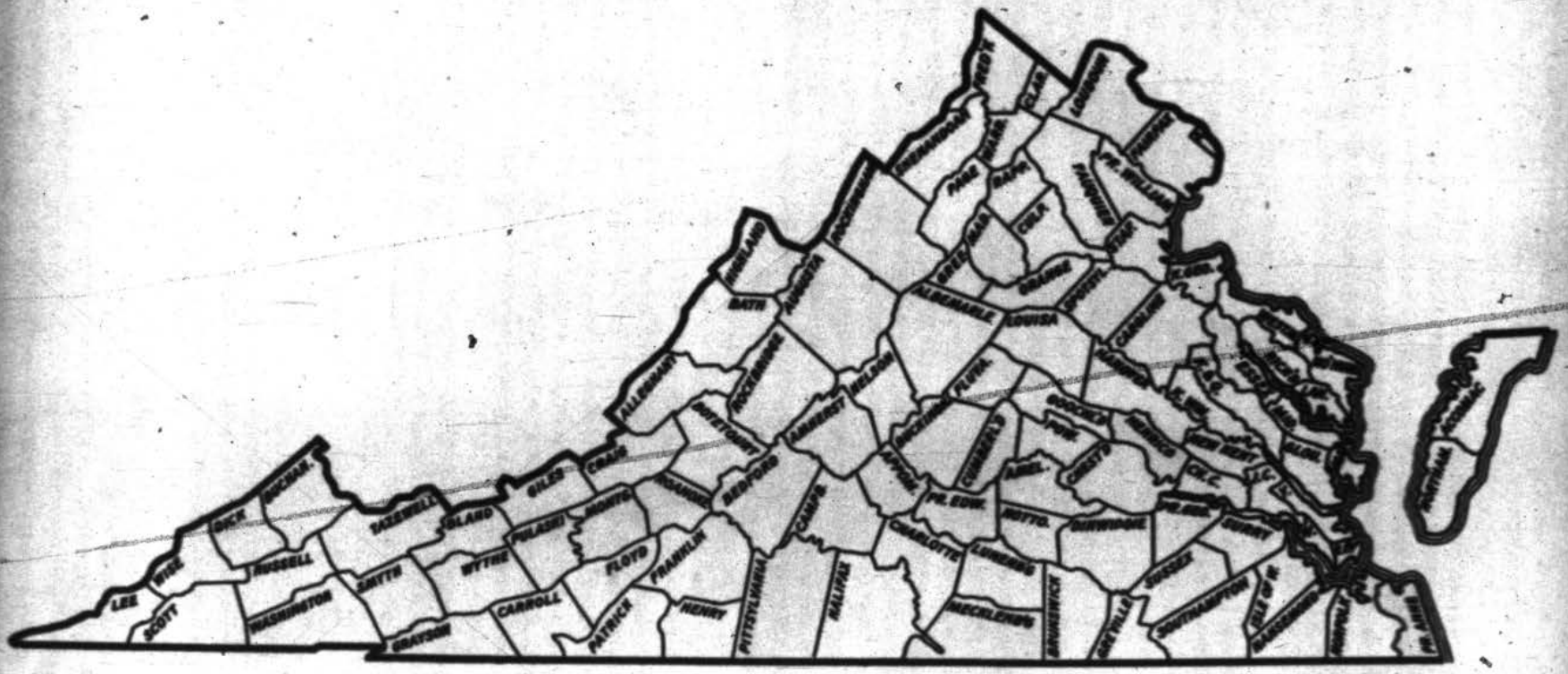
1. Cooperative Work with Farm Agents and Home Demonstration Agents
2. Cooperative Work with Other Agencies
3. Garden Publicity Work

These phases naturally overlap, but for the purpose of discussion, they will be handled separately.

1. Cooperative Work with Farm Agents and Home Demonstration Agents

As in the case of all other projects most of the garden work was done thru the Farm Agents and Home Demonstration Agents. Several means were used in putting the work over. Among the more important were:

Meetings
Short Courses
Garden Contests
Fertilizer Demonstrations
Circular Letters
Bulletins
Free Seed Distribution
Talks



Counties Visited in Home Garden Project.

A brief discussion of these follows:

Meetings. Fifty-nine meetings were held with a total attendance of 2,150. An average attendance of 36 for a series of 59 meetings speaks well for the interest in garden work. Forty-three 4-H Clubs and adult clubs were met with a total attendance of 1,307 and an average attendance of 30. Various problems typical of the home garden were discussed at all these meetings. The number of meetings was limited because of the lack of time to devote to the project.

Short Courses. Garden work was given at the Cape Henry and the Hampton Hiday Short Courses. Combined attendance at these short courses was 916. Work was also planned for Fredericksburg, but this short course was called off due to the prevalence of infantile paralysis. Some excellent work was done at the short courses attended.

Garden Contests. Aid was given in garden contests in twelve counties. Garden contest requirements and score cards were worked out by this office. The gardens entered in the contests were scored both spring and fall by the specialist. At each visit, the contestant was given the help particularly applicable at that time. 395 visits were made to gardens entered in the contests. Each garden served as a demonstration in the community in which it was located. New vegetables were introduced into scores of the gardens.

In addition to the gardens scored in this State, 150 gardens were scored in West Virginia by this department. This work was undertaken at the request of the Superintendent of the U. S. Coal & Coke Company, of Gary, West Virginia. The gardens belonged to the employees located at the twelve mines of the company. This is the fifteenth year that the company has carried on the project. A number of the gardens which were inspected had as many as 30 vegetables growing and every available space was planted around the home. Quite a number of the gardens were grown on land that was filled in with coal cinders and from six to eight inches of earth on top of this. It is the opinion of the judges from the University of Ohio, the University of West Virginia and this Station, that this is a fine project to continue.

Fertilizer Demonstrations. Twenty-nine 10-lb. sacks of nitrate of soda were donated this office for garden work by the Chilean Nitrate of Soda Agency. This material was distributed to some of the garden contest members in five counties. Instructions and demonstrations were given where needed.

Circular Letters. Seven circular letters containing pertinent garden information were prepared and distributed thru the agents. Altho written by this department, the letters were sent out under the signature of the respective agents in order to give

them a personal touch. Waste in distribution was avoided by sending the letters to only those agents who requested them and only in the number requested. The subjects covered in the circulars were:

Soil Preparation
Seed Bed
Transplanting
Cultivation
Fertilization in general
Fertilization of the Fall Garden
The Fall Garden

The number of agents who made use of the letters is given below:

County Agents	19
County Home Demonstration Agents	25
Negro Agents	0
Negro Women Agents	0

The total distribution of these letters was 31,021; the average distribution was 3,131.

Bulletins. Hundreds of garden bulletins were distributed on request. The supply of Circular B-203, Vegetable Garden Suggestions for Virginia Farmers, was exhausted. To date 20,000 copies of this circular have been used in the State.

Free Seed Distribution. Five hundred fifty-two ounce packages of spinach seed and 508 ounce packages of kale seed were distributed free to garden club members and others in various counties. Ounce packages of both spinach and kale were given to each person, making the total distribution 508. This seed was furnished free of charge thru the courtesy of several commercial seed companies. Such distribution began with the desire on the part of the specialists to encourage the use of these greens. Many who received the seed this year had never grown these greens before; some few did not even know that they were. Out of the 508, there should be a goodly number who will continued to use them. This is the third year of such distribution and progress can already be seen in various communities.

Fairs. The personnel of this department aided in the club exhibits at several fairs. The work consisted largely of judging and giving demonstrations on choosing fair exhibits.

B. Cooperative Work with Other Agencies

The time of the Specialists was given as much as possible to work thru the Extension Agents. Some work was necessary with outside agencies, however, and a discussion of this work follows:

Institutional Work. The following institutions were visited and aided in their garden problems:

Western State Hospital	Staunton, Va.
Central State Hospital	Petersburg, Va.
Eastern State Hospital	Williamsburg, Va.
St.Paul's Industrial School	Lawrenceville, Va.
Hughes Memorial School	Danville, Va.

Virginia Seed Service. At the request of the Virginia Seed Service this office prepared standard seed collections to cover various size gardens. The seed collections were limited to three. The first was for a half-acre garden, chosen because it is the area recommended for the farm garden. The second collection was for approximately an eighth-acre garden since that is the relative size of the semi-rural garden. The third collection was for approximately a twentieth-acre garden, the urban garden. The Virginia Seed Service is planning to put out these collections at a special price attractive to the trade. They should have an appeal to the average gardener who thoroughly dislikes making up a seed order and who generally ends up by getting his seed at the corner store. It is doubtful that they will appeal much to the man who loves gardening and whose seed order is a matter of hours of study and enjoyment. The same information will also be furnished to other seed companies requesting it.

Garden Information. Garden information in the form of bulletins and letters was sent out to practically every county in the State.

5. Garden Publicity Work

Publicity work is essential in putting across any program. Information in itself is of no value; it becomes of service only when it is placed before those who need and will use it. Various publicity means were used in carrying out the garden project.

Press Articles. Numerous press articles were prepared and published in the Extension Division News and agricultural papers.

Bulletins. Bulletins were utilized where they served a purpose. Wholesale distribution was discouraged.

Circular Letters. At the request of 11 County Home Demonstration Agents, 9 Farm Agents, 9 Negro Men Agents and 7 Negro Women Agents, the garden letters were continued. A total of seven were written having a distribution of 31,981.

4-H Garden Club Projects

34

4-H Garden Club Project

Giving Instruction to Garden Club Member

9648

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.D.A. Cooperating
EXTENSION SERVICE

Dear Garden Club Member:

One of the first considerations for a successful garden is thorough soil preparation. Cover your garden with well rotted manure at the rate of one ton to every 1,000 sq. ft. of garden space, and plow at once if soil is dry enough. Turn up one-half inch of subsoil. This will tend to deepen and improve your garden soil from year to year. Plow now, not tomorrow. After plowing, harrow the land thoroughly, four or five times if necessary. Final preparation should be made with a rake. The soil is the home of the vegetable. You cannot get it too well prepared. The ideal is a finely pulverized soil with no clods or lumps. Do not give planting a thought until you have attained this ideal. Let's make this year's garden the best ever.

Yours for a good garden,

Agent

9647

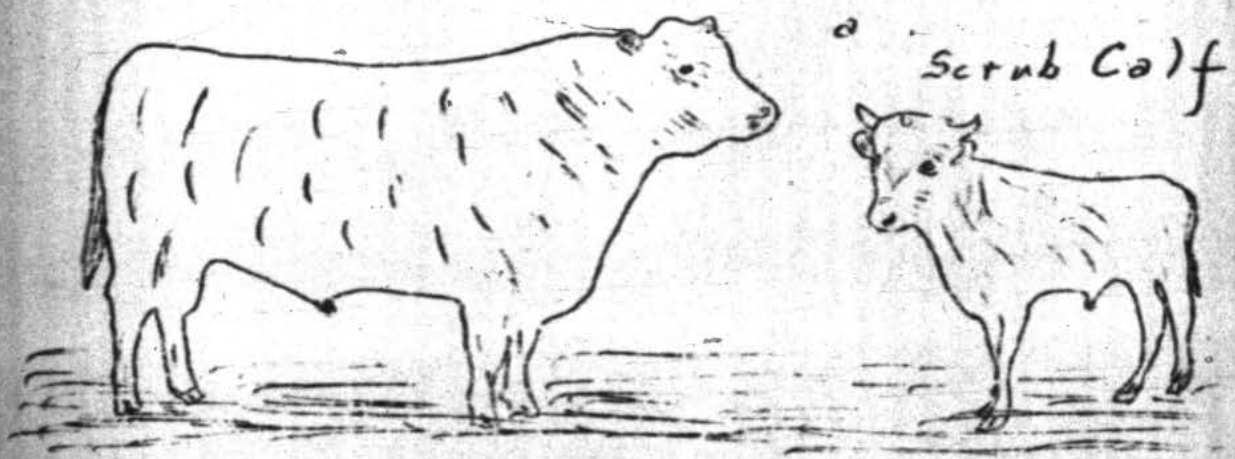
COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.D.A. Cooperating
EXTENSION SERVICE

Dear Garden Club Member:

Why try to grow good vegetables from poor, low grade seed? It can't be done. Order the best seed obtainable from some reliable seed house. The difference in

You can't grow

A Thoroubred Bull from a Scrub Calf



the initial cost of good seed and poor seed is but little. The chief difference shows up in the yield. Why take a chance on the success of your garden? Cheap seed is always expensive seed in the end. Insure the success of your garden and pay the first premium by purchasing good seed. The garden will pay you dividends later.

Select a good assortment of vegetables. Include both leafy and root types. Below is a list of some of the vegetables which may be grown in the home gardens of Virginia. Those underlined should be in every garden; those not underlined may be planted if desired:

Beans	Celery	Okra	Potatoes	Swiss Chard
Beets	Cucumber	Onions	Pumpkin	Sweet Corn
Cabbage	Kale	Parsnips	Radish	Sweet Potatoes
Carrots	Kohlrabi	Peas	Salsify	Tomatoes
Cauliflower	Lettuce	Peppers	Spinach	Turnips
	Melons		Squash	

Order the varieties listed in Virginia Extension Circular E-263, "Vegetable Garden Suggestions." If you do not have a copy of this circular, ask me for one.

Yours for a better garden,

Agent

9718 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.I.A. Cooperating
EXTENSION SERVICE

Dear Garden Club Member:

Why try to grow vegetables without supplying them with plant food? It can't be done. It is assumed that you applied manure to the garden before plowing. In addition, give the garden a liberal application of a high analysis fertilizer. A 5-8-5 or a 4-12-4 is recommended. Use 4 or 5 pounds to each 100 square feet of garden space.

If a liberal application, such as the above, is made, broadcast the fertilizer over the entire surface of the garden and thoroughly harrow or rake it into the soil. If a smaller application is made, it may be placed in the rows. In either case it is important to get the fertilizer thoroughly mixed with the soil. No seed or plant roots should come in direct contact with fertilizer.

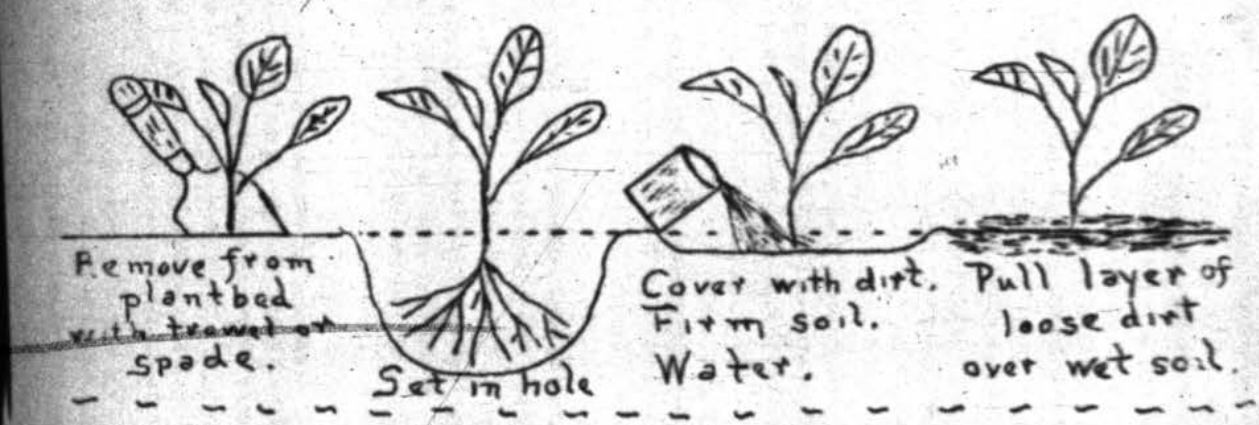
The fertilizer may also be applied in two or three applications. The first application should be made before sowing the seed or setting the plants. The second application should be made after the plants are well up and growing nicely. In topdressing be sure that the fertilizer is not put directly on top of the plants. Don't starve your plants - feed them!

Yours for giving the vegetables a chance,

Agent

9752 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.D.A. Cooperating
EXTENSION SERVICE

Dear Garden Club Member:



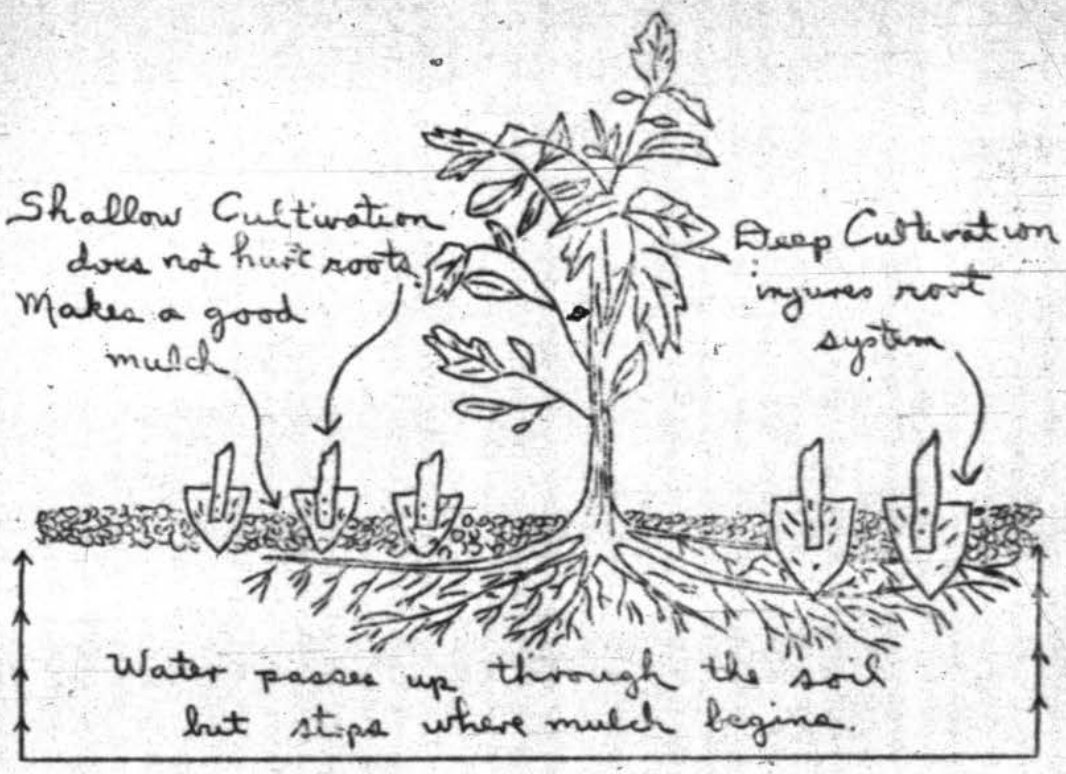
Thousands of plants will soon be transplanted to the home garden. Their performance during the coming months will depend considerably on how they are handled now. Transplanting is a shock to the plant which it has to overcome before it becomes acclimated to its new environment. The less the shock, the more quickly will the plants start off and grow vigorously. Certain precautions tend to reduce this shock. First, select only strong, stocky, vigorous plants for transplanting. Wet the soil before removing the plants from the bed. This causes the dirt to stick to the roots, saves the roots from exposure, and helps to prevent breaking the small feeder roots. As much dirt as possible should be left on each root in transplanting. Use a trowel or spade in removing the plants from the bed. Do not pull them up by hand. Usually, the best time for transplanting is late afternoon. Cloudy days are especially good. In the home garden, it will often pay to shade the plants for a day or two after transplanting. This is especially true if the days are bright and sunny. Set the plant in the hole and firm the dirt around the roots. Pour a cup of cold water on the firmed soil and then pull some loose dirt over the top of the moist soil. The firmed soil will bring the water into contact with the plant roots; the loose soil will prevent the evaporation of this moisture into the air.

Yours for proper transplanting,

Agent

9805 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Polytechnic Inst. & U.S.D.A.
Cooperating
EXTENSION SERVICE

Dear Garden Club Member:



Fresh vegetables contain from 75% to 95% water. For example, in every hundred pounds of tomatoes grown in your garden, the fruit alone will contain over 96 lbs. of water. In addition, the plants will use and contain an enormous amount. Other vegetables are correspondingly high in water content. Where do the plants get this water? Nature puts it into the ground in the form of rain. You cannot increase the rainfall, but you can help to save it for the plants by thorough, shallow cultivation. Don't cultivate deep or you will destroy many of the feeder roots. The ideal is a layer of dust-like soil, one to two inches deep. To secure this, it will be necessary for you to cultivate every week or ten days if the weather permits. Cultivate often and well.

Yours for shallow cultivation,

Agent

9967 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly.Inst. & U.S.D.A.Cooperating
EXTENSION SERVICE

Dear Garden Club Member:

Hundreds of home gardeners in Virginia have no fresh vegetables during the fall and winter months. Do you? Now is the time to plan your fall garden. Order your seed at once from some reliable seedsman. The following list will give you information on vegetables and planting dates for the fall garden.

Vegetables	Varieties	Planting Dates Tidewater and Middle Va.	Piedmont and Western Va.
Beans	Stringless Green Pod	August 1-15	August 1-10
Beets	Crosby Egyptian	August 1-10	July 15 - Aug.10
Cabbage	All Seasons (Wakefield)	September-Oct.	Set plants July 15
Carrot	Chantenay	August 1-10	July 15
Chicory	Witloof	August 1-10	
Collard	Carolina	August 1-10	July 15
Celery	Self Blanching	July	Set plants July 15
Corn	Howling Mob Country Gentleman	August 1-15	July 15
Endive	Curled	August-Sept.	August 1-10
Kale	Curled Siberian	September	July 15-Aug.30
Lettuce	New York (Head) Grand Rapids (Leaf)	Aug. Sept.	Aug. - Sept.
Onion	Potato	October	October
Peas	Thomas Laxton Alaska	August 15	July 15-Aug.1
Radish	Scarlet Globe White Icicle Black Spanish	September	August
Rutabaga	Purple Top	August	August 1-10
Spinach	Savoy	Aug.15-Nov.15	August-Sept.
Swiss Chard	Long White	August 1-10	July 15
Tomato	Stone	Sept.plants-Aug.15	Set plants July 15
Turnip	Yellow Aberdeen Purple Top Globe	August	August 1-10
Turnip Salad	Sgreen Top	August-Sept.	August-Sept.

Yours for fresh vegetables in the winter time,

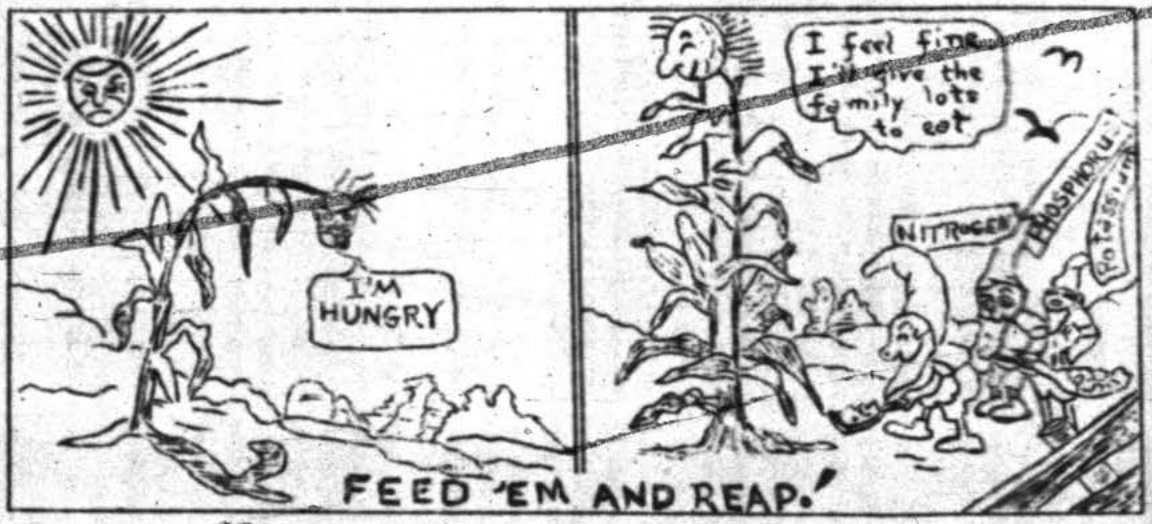
Agent

10,068

Cooperative Extension Work in Agriculture and Home Economics
State of Virginia, Va. A. & M. College and Poly. Inst. & U.S.D.A.Cooperating
EXTENSION SERVICE

Dear Garden Club Member:

A successful fall garden depends primarily upon the care and attention you give it. You can't lie down on the job now and have plenty of vegetables later. Most of your planting is completed, but you can still sow radishes, kale, spinach, lettuce, turnips, etc.



Remember the fall garden requires fertilization as well as the spring and summer garden. Apply a 5-8-5 or a 4-12-4 fertilizer at the rate of from 2 to 5 pounds per 100 square feet of garden space. The application will depend on how heavily you fertilized your spring and summer garden. Feed your vegetables now and feed on them later.

The average garden after August 1 is a patch of weeds. Is yours? No vegetable can thrive when forced to compete with weeds. Cultivate every week or ten days, oftener if necessary. Also cultivate as soon after each rain as the condition of the soil will permit. A little time spent now will afford you vegetables of quality and flavor later.

Spray to control vegetable pests. Arsenate of lead at the rate of 8 teaspoonfuls to one gallon of water will control most chewing insects. Black leaf 40 (nicotine sulphate) at the rate of 1½ teaspoonfuls to one gallon of water will control most sucking insects. Consult me about your particular problems.

Yours for winter vegetables,

Agent

9491 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.D.A. Cooperating
EXTENSION SERVICE

REQUIREMENTS FOR GARDEN CONTEST

Prince Edward County

1. All contestants must have their names in the Co. Home Dem. Agt's. office by March 1.

2. A garden must be at least 1/10 of an acre to compete. Additional credit will be given for larger gardens provided they are properly cared for. Better a small garden, well taken care of, than a large garden neglected and grown up in weeds.

3. Each contestant must have actual supervision of the garden entered. It is expected that each contestant will do some of the actual garden work. Consideration will be given this factor in scoring.

4. At least 15 of the following vegetables must be included in the garden. Credit will be given for additional vegetables planted and for the selection of vegetables planted. Both root vegetables and green and leafy vegetables should be planted.

Asparagus	Cauliflower	Okra	Pumpkin	Sweet potatoes
Beans	Celery	Onion	Radish	Swiss chard
Lima beans	Corn	Parsnip	Rhubarb	Tomatoes
Beets	Cucumbers	Peas	Salsify	Turnip
Cabbage	Kale	Pepper	Spinach	Turnip salad
Carrots	Lettuce	Potatoes	Squash	

Vegetables not included in the above list may also be planted.

5. Each contestant must keep a garden record showing planting dates, work done, cost, etc. in a record book furnished by the Co. Home Dem. Agt.

6. All possible help will be given the contestants by the Co. Home Dem. Agt.

7. The garden will be scored twice during the year by a state garden specialist, the exact dates of each scoring to be determined later. The first scoring will be of the spring and summer garden; the second scoring will be of the fall and winter garden.

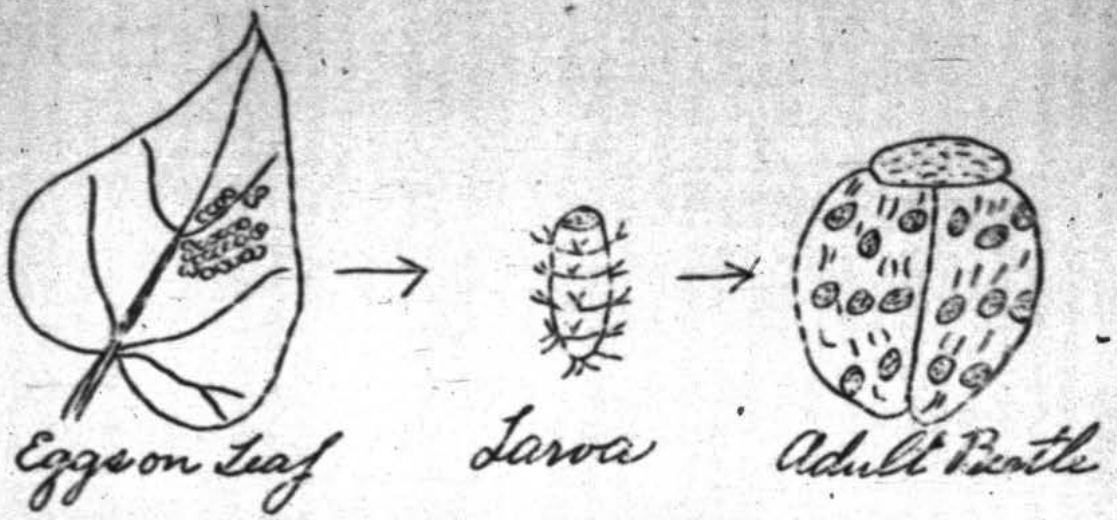
8. In scoring the garden the following points will be taken into consideration:

A. Natural difficulties to be overcome	F. Fertilization
B. Per cent. of work done by contestant	G. Cultivation
C. Size of garden	H. General appearance of garden
D. No. and selection of vegetables planted	I. Pest control
E. No. and variety of succession crops	J. Record book

9. Prizes will be awarded to the highest scoring gardens.

8845 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.D.A. Cooperating
EXTENSION SERVICE

Mr. Gardener:



The Mexican bean beetle is here. If control measures are not taken, your entire crop may be lost.

Description of the Insect: The adult insect is about the size of a pea, yellowish or copper colored, with sixteen small dark spots upon the back of the wing cover, eight on each wing cover. The larvae are bright yellow, one-eighth to three-eighths inches in length and covered with spines.

Character of Injury: Both the adult and the larva feed mostly on the undersides of the leaves. The injury is characteristic in that the larger veins and much of the upper leaf surface is left untouched, thus giving the leaf a lace-work appearance.

Control: Dusting with the following mixture is recommended:
1 part calcium arsenate
? " hydrated lime

Since the pest feeds largely on the undersides of the leaves, it is essential that the material be applied to the undersides of the bean foliage. It is a waste of material and energy to dust only the upper sides of the plant.

Calcium arsenate may also be applied as a spray as follows:

For Large Mix:	calcium arsenate	- 3/4 lb.
	hydrated lime	- 1-1/2 lbs.
	water	- 50 gals.
For Small Mix:	calcium arsenate	- 1 level tablespoonful
	hydrated lime	- 2 " "
	water	- 1 gal.

Apply as soon as the beetle appears and repeat at intervals of from a week to ten days as long as the beetle is present.

Do not use lead arsenate or Paris green on beans, as these poisons burn the foliage severely.

Agent

9767 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly.Inst. & U.S.D.A.Cooperating
EXTENSION SERVICE

Dear Asparagus Grower:

Arparagus is an easy and a profitable crop to grow provided proper cultural directions are followed. The soil should be a light sandy loam, well drained, rich and with an abundance of organic matter. Under no condition should commercial asparagus be planted in clay soils or soils deficient in organic matter.

Preparation of the Soil

Plow the soil as deep as possible. Not over one-half inch of subsoil should be turned up in any one year. Harrow several times to secure a good level seed bed. Then cultivate every week until the roots are planted.

Fertilization

Organic matter must be present in the soil to secure good yields of asparagus. Manure is the best fertilizer and should be broadcast at the rate of from 20 to 40 tons per acre before the land is plowed. Provided the manure is well retted it may be applied after plowing and thoroly worked into the soil. If manure is not available, a green crop such as rye, clover, soy beans, cow peas, etc. should be plowed under. In addition, apply a 5-8-6 or a 7-6-6 fertilizer, at the rate of 1,000 to 1,500 lbs. per acre. Broadcast this fertilizer down the row and work it into the soil before the roots are planted.

Planting the Roots

Mark off the field in rows five feet apart. Use a small turning plow to furrow out the rows to a depth of 12 inches. This can be done by running three times to the row. After this is done, broadcast the fertilizer in the furrow and work it into the soil with a cultivater. Set the plants in the bottom of the furrow with the roots spread out in cartwheel fashion and cover to a depth of two inches. As growth takes place, gradually fill in the furrow until the land is level. By the end of the season, the roots should be from 7 to 8 inches under the ground. Deep planting is essential in asparagus growing.

Cultivation

Frequent cultivations are essential during the first and second years to control weeds and to conserve moisture. The first year, a small growing truck crop may be planted between the asparagus rows to pay for the cultivation.

Pest Control

The chief insects attacking asparagus are the asparagus beetles. Since no asparagus will be cut during the first year, they can be controlled by spraying with dry lead arsenate at the rate of two pounds of lead arsenate to 50 gallons of water. One spray will usually kill all the beetles on the grass. Information on the control of this pest when the grass is being cut for eating can be secured at my office.

Rust is the disease most dreaded by asparagus growers. There is no spray to control this disease. A new bed should never be set close to an old one that is infected with rust. Only rust resistant varieties such as the Mary and Martha Washington should be planted, and preferably only the Mary Washington.

If you have any problems relative to asparagus growing write me or call at my office.

Yours for more and better asparagus,

County Agent

MINOR PROJECTS

In addition to the four major projects, special work was carried on with several minor projects. A discussion of the more important of these is included in this report.

Mexican Bean Beetle Control

Regardless of the purpose of a specialist's visit and regardless of the county visited, he was sure to be asked before leaving how to control the bean beetle. This insect, in every county of the State, has caused more concern than any one other pest. Numerous demonstrations were given in the actual control of this pest.

Circular Letters. Three circular letters were prepared and distributed treating the following phases of the problem:

1. General Letter on Control
2. Source of Materials
3. Dusters and Sprayers

Dusting Equipment. Seven dusters were furnished to the County Agents for demonstrational purposes by commercial companies thru this department.

Asparagus Production

The commercial asparagus industry in Virginia at the present time is limited pretty largely to Lancaster County. One fertilizer demonstration was given in this area. The nitrate of soda for thy demonstration was furnished by the Chilean Nitrate Agency. The results follow:

Stevens Asparagus Fertilization Demonstration - Lancaster County

Plot	Kind of Fertilizer	Rate of Application	Date of Application	Yield per Acre	Value
1	7-6-6	750 lbs.	5/25	1,008 bunches	$252
	5-6-6	750 lbs.	6/20		
	Manure	25 loads	Fall		
	Nitrate	150 lbs.	4/6		
2	7-6-6	750 lbs.	5/25	624 bunches	$156
	5-6-6	750 lbs.	6/20		
	Manure	25 loads	Fall		

No definite data are available on asparagus fertilization. Most general recommendations state that the fertilizer should all be applied after the cutting season. The above demonstration points to the need of nitrate available at the cutting season. The only difference in the treatment of the two plots was that Plot 1 received 150 pounds of nitrate of soda

applied April 5. The results speak for themselves. The nitrated plot gave an increased yield of 326 bunches per acre with an increased value of $96.00. The nitrated plot was earlier and in addition received advantage of a higher price per bunch. This is not taken into account in the $96.00 profit as the grower failed to keep a record of the varying prices per bunch. The average price received per bunch and on which the results are based was 29 cents.

King and Queen County. Work was done during the past year with 45 growers in King and Queen County who are just beginning with this crop. The specialist visited each grower, helped him pick out the site, and gave cultural instructions for the crop. One circular letter on cultural practices was distributed in this county.

Cantaloupe Production

Help was given cantaloupe growers in Prince Edward and Essex counties. This work was largely instructional on cultural practices. One fertilization demonstration was conducted in Prince Edward County in cooperation with the Chilean Nitrate Agency. The purpose of this demonstration was two-fold,- first, to demonstrate the value of high analysis fertilizers, and second, to demonstrate the advantage of top dressing the cantaloupe crop with nitrate of soda. The demonstration was outstanding. The results follow:

Smith Cantaloupe Fertilization Demonstration - Prince Edward Co.

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5-8-5	1000 lbs.	44 crates	$ 69.76
2	5-8-5	1000 lbs.	80 crates	126.80
	Nitrate	150 lbs.		
3	5-8-5	1000 lbs.	32 crates	50.48
	Nitrate	150 lbs.		
4	3-8-3	1000 lbs.	24 crates	36.00

Rarely does a demonstration present as clear cut a picture as the above. 5-8-5 yielded almost double the 3-8-3, 20 crates more per acre with an increased value of $33.76. 5-8-5 with nitrate outyielded 3-8-3 with nitrate by 56 crates per acre with an increased value of $87.04. The 5-8-5 with nitrate yielded exactly double the 5-8-5 alone, 44 crates more per acre with an increased value of $69.76. 3-8-3 with nitrate more than doubled the yield of 3-8-3 alone, 22 crates more per acre with an increased value of $46.48. The recommended fertilization (5-8-5 plus nitrate) yielded over 3.66 times as much as the grower's fertilization (3-8-3), 64 crates more per acre with an increased value of $103.52. No further discussion is necessary to reinforce such results.

Cabbage Production

Four cabbage fertilization demonstrations were conducted in Smyth County. Two of these were in cooperation with the N.Y. Potash Association, and two in cooperation with the Chilean Nitrate Agency. The results follow:

Kiser Cabbage Fertilization Demonstration - Smyth County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	0-10-0	800 lbs.	232 crates	$410.64
2	4-10-0	800 lbs.	350 crates	665.00
3	4-10-6	800 lbs.	299 crates	559.23
4	4-10-12	800 lbs.	311 crates	550.47

The purpose of this demonstration was to show the value of nitrogen and potash. 4% nitrogen showed an increased yield of 43 crates per acre valued at $84.96 more than 0% nitrogen. 4% potash showed an increased yield of 19 crates per acre over 0% potash valued at $35.85. 12% potash showed an increased yield of 31 crates per acre valued at $54.07 over 0% potash and an increased yield of 12 crates per acre valued at $21.24 over 6% potash. The results are conclusive and need no further discussion.

Bush Cabbage Fertilization Demonstration - Smyth County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	0-10-0	800 lbs.	400 crates	$800.00
2	4-10-0	800 lbs.	305 crates	488.00
3	4-10-6	800 lbs.	196 crates	314.00
4	4-10-12	800 lbs.	300 crates	480.00

Plot No. 1 was covered with 4 inches of top soil washed down in a cloudburst from a cornfield on the hill just back of the cabbage field. This cornfield had been fertilized with 800 pounds of 4-12-4 per acre. Plot No. 2, altho not as heavily covered as Plot No.1, was also affected. There is no true comparison, therefore, of 4% versus 0% nitrogen or of 6% versus 0% potash. The comparable plots are No.3 and No.4. 12% potash outyielded 6% potash by 96 crates per acre with an increased value of $216 per acre. Because of the cloudburst mentioned above, however, very little weight can be attached to any comparisons of this demonstration.

Jones Cabbage Fertilization Demonstration - Smyth County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	5-8-5	1000 lbs.	37,620 lbs.	$[illegible]
2	2-8-2	1000 lbs.	29,870 lbs.	423.18
	Nitrate	150 lbs.		
3	5-8-5	1000 lbs.	37,400 lbs.	[illegible]
	Nitrate	150 lbs.		
4	2-8-2	1000 lbs.	28,060 lbs.	[illegible]

Unfortunately the county agent was not present when this demonstration was seeded and the grower used the Danish Ballhead variety on Plots I and II and the variety Domestic on Plots III and IV. There is no true comparison, therefore, between Plots I and III and between II and IV. The only fair comparison is the average yield of Plots I and III versus the average yield of Plots II and IV. Plots I and III where 5-8-5 and nitrate were used outyielded Plots II and IV where 2-8-2 and nitrate were used by 8,555 pounds per acre with an increased value of $119.40. The results at least show the advantage of using a greater amount of nitrate and potash on cabbage than 2%.

Atkins Cabbage Fertilization Demonstration - Smyth County

Plot	Kind of Fertilizer	Rate of Application	Yield per Acre	Value
1	4-16-4	400 lbs.	12,750 lbs.	$159.00
2	5-8-5	1000 lbs.	22,932 lbs.	[illegible]
	Nitrate	150 lbs.		
3	4-16-4	400 lbs.	28,518 lbs.	356.40
	Nitrate	150 lbs.		
4	5-8-5	1000 lbs.	32,548 lbs.	406.84

Two things occurred in this demonstration which were unlooked for. 5-8-5 alone outyielded 5-8-5 with nitrate by 9,618 pounds per acre with an increased value of $120.20. The lower application of 4-16-4 with nitrate outyielded the higher application of 5-8-5 with nitrate by 5,580 pounds per acre, with a value of $69.75. At first no possible cause could be assigned for these results by the agent, grower, or specialist. The land appeared to be all the same soil type and had had the same rotation. The grower finally recalled, however, that six years ago a barn was removed from the acre covered by Plots III and IV. This barn had been in use for several years. The soil of this acre had thus been considerably enriched both in plant food and humus. Residues of intermediate crops but added to its fertility. The discrepancy was thus explained. The barn had entirely slipped the mind of the grower when the demonstration was planned. Also showing the effect of this accumulated fertility as well as the present year's fertilization, the higher application of 5-8-5 outyielded the lower application of 4-16-4 by 19,838 pounds per

Field Ready for Marking

Cabbage Marker

Field Marked - Ready for Planting

Cabbage Fertilization Plot

Harvesting Demonstration Plot

Hauling and Loading Cabbage

Cabbage Fertilization Test

acre with an increased value of $247.86. Likewise 4-16-4 with nitrate greatly surpassed 4-16-4 alone in yield,- 15,752 more pounds per acre with an increased value of $197.40.

Wythe County. This office cooperated with the Virginia Truck Experiment Station in a cabbage fertilization experiment in the vicinity of Rural Retreat, Virginia. The vegetable specialist made several trips to the farm on which the plot was located. Aid was given in securing a grower to conduct the experiment, in locating the site, applying fertilizer, etc. The experiment will have to be carried on for at least 3 years before definite recommendations based on it can be given the growers. Valuable aid was given in this work by L. J. Reynolds, Smith Hughes Instructor, at Rural Retreat.

Cucumber Production

Aid was given this year to cucumber growers in Prince Edward County, Essex County and King and Queen County. Two circular letters on cultural practices were distributed to the growers. Three meetings were held at which cucumber production problems were discussed.

This department attempted particularly to give all the help possible to the cucumber growers in Prince Edward County. Seventy-five growers in this county contracted with the Fanning Bread and Butter Pickle Company, of Norfolk, to grow 102½ acres of cucumbers. 4 acres were dropped and nineteen men violated 23 acres. This left a total of 75½ acres grown by 52 growers. The vegetable specialists visited the county several times to attend meetings, visit growers, and give information and demonstrations on all the cultural practices relating to the crop. As much time as possible was given this work as Prince Edward County is primarily a tobacco county and the success of this work would mean a supplementary cash crop.

A total of 4,854 bushels were raised and 10 cars shipped. The dates of shipment are of interest because of their relation upon the possibilities of this section fitting in with other cucumber marketing sections. This information follows:

Date of Shipment	Bushels
July 15	486
July 17	424
July 19	481
July 22	474
July 24	481
July 26	412
July 27	644
July 30	435
August 3	548
August 6	453
Total	4,854

This period would fit in very well with the Norfolk pickling section.

The yield per acre averaged only 64 bushels. Actual yields ranged from 6 to 317 bushels per acre. One-third of the growers produced over one-half the total yield. The reasons for the low average yield per acre were largely two: first, mildew cut down the cucumber yield this year all over the state; and second, the cucumber crop was new to all of the growers concerned. The total value to the county of all the cucumbers shipped was $8,620.50. The average value per grower was $69.72 and the average value per acre $48.00. The good growers averaged much more. Thus, the grower having the highest yield per acre produced 317 bushels per acre valued at $152.75.

In order to secure complete records of the crop and to make this information available to the grower next year the following form was sent to each grower:

9051-1 CUCUMBER PROJECT - PENDER EDWARD COUNTY - 1929

Name_____ Address_____

No. Acres Grown_____ Kind of Soil_____

1927 1928 1929

Date Land Plowed_____ Winter Cover Crop Used_____

Amount of Manure Used Per Acre_____

Nitrogen Phosphorus Potassium

Kind and Amount of Fertilizer Used Per Acre_____

Date of Seeding_____ Amount of Seed Per Acre_____

Seed by Hand_____ or Planter_____ In Rows_____ or Hills_____

No. Cultivations with Hoe_____ No. Horse Cultivations_____

Insect Control with Dust_____ or Spray_____ Times Applied_____

Top Dressed with Nitrate of Soda_____ Time Applied_____ Amount Per Acre_____

No. Bushels Cucumbers Sold_____ Crop to Follow Cucumbers_____

Remarks_____

31 of the 58 growers filled out these forms and returned them to the County Agent. Some interesting facts are brought out by these records.

1. The ten highest growers produced an average of 149½ bushels of cucumbers per acre valued at $110.62 per acre; the ten lowest growers produced an average of 51½ bushels per acre valued at $23.62 per acre.

2. Based on records of 31 growers the date of planting apparently bore a direct relation to yield. Those planted from May 10-16 yielded an average of 105.4 bushels per acre; May 17-23, 90.2 bushels per acre; and May 24-30, 69.3 bushels per acre. Only one grower planted as late as June 1 and secured a yield of 61 bushels.

3. Based on records of 31 growers, upland soil averaged 105.4 bushels per acre; lowland, 68.6 bushels.

4. Based on records of 31 growers, those who dusted for insect control averaged 80.4 bushels per acre; those who failed to dust averaged 75.2 bushels. Based on 29 records, those who dusted once secured an average yield of 69.3 bushels per acre; those who dusted 2 or more times averaged 85 bushels per acre. Two growers who sprayed with Bordeaux as well as dusted secured 217 bushels and 174 bushels per acre respectively. The grower securing 174 bushels per acre states that one dusting with Bordeaux dust secured him at least 100 additional bushels at a cost of less than $1.00 by checking the mildew.

5. As might be expected, fertilization and yield were closely correlated. Based on 25 records this relationship is shown in the following table:

Number of Growers	Fertilizer Used: Amount	Analysis	Yield per Acre
3	0-400 lbs.	4-8-4 or better	41.3 bu.
6	500-800 lbs.	4-8-4 " "	91.7 bu.
9	900-1200 lbs.	4-8-4 " "	108.6 bu.
1	1300 up	4-8-4 " "	151.0 bu.
2	0-400 lbs.	3-8-3 or less	8.5 bu.
5	500-800 lbs.	3-8-3 " "	95.4 bu.
2	900-1200 lbs.	3-8-3 " "	112.0 bu.

This comparison speaks for itself. A further statement, however, adds additional proof to the value of fertilizer. Regardless of the amounts used those growers using 4-8-4 or better averaged 96 bushels per acre; those growers using 3-8-3 or lower averaged only 85.8 bushels per acre.

2767 COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Virginia, Va. A. & M. College & Poly. Inst. & U.S.D.A. Cooperating
Extension Service

Dear Cucumber Grower:

Cucumbers can be grown on almost any good soil. The ideal soil, however, is a sandy loam, well supplied with organic matter and overlying a subsoil of medium clay or close sand.

Preparation of the Seed Bed

Plow the soil to a depth of from six to eight inches. It should then be disced several times, and harrowed and dragged to insure a good, firm, level seed bed.

Laying off Rows and Applying Manure

Lay the rows off five to six feet apart. Apply stable manure down the row at the rate of ten to twelve tons per acre. This can be done best with a manure spreader. If the manure is applied by hand, it should be spread over an area two feet each side of the row. The manure should be mixed with the soil at the time the rows are bedded. This can be done by the use of a small turning plow by throwing four furrows together. The rows should then be gone over with a drag and the beds leveled to a height of two inches.

Fertilization

A 6-8-6 fertilizer should be used at the rate of 1,000 to 1,500 lbs. per acre. This fertilizer should be applied broadcast on the bed ten days before planting and thoroly worked into the soil with a light harrow.

Seeding

The seed should be drilled one inch deep in the row from April 25 to May 15 at the rate of five pounds per acre.

Cultivation

Cucumbers are a quick growing crop and require an abundance of moisture. Cultivate every week or ten days if the weather permits. In addition, cultivate after each rain as soon as the land can be worked. Continue cultivation as late in the season as possible without injury to the vines.

Insect Control

The chief insects attacking cucumbers are the cucumber beetle and the flea beetle. When the plants are coming thru the ground, apply fish scrap at the rate of 150 to 200 lbs. per acre of nitrate of soda at the rate of 75 to 100 lbs. per acre close to the plants to push the plants along. At the same time apply one of the following dust mixtures:

1 part calcium arsenate
15 " hydrated lime

1 part calcium arsenate
20 " gypsum or land plaster

Copper lime dust (sometimes called Bordeaux dust) can also be used. Regardless of the mixture used, however, the plants should be kept thoroly coated with the dust until they are about five inches high. To do this it will be necessary to dust every week and after every rain.

Disease Control

Since mosaic is one of the most important diseases of cucumbers, all plants which are known to carry mosaic over winter should be removed from the field and from all land within a radius of 50 to 75 yards of the cucumber field. Such weeds include the wild cucumber, milk weed, wild ground cherry, poke weed and catnip. To control anthracnose and other fungous diseases apply a 4-4-50 Bordeaux spray or a commercial copper lime dust after the vines have set their fruit. If dust is applied, it must be put on early in the morning while dew is on the vines. The spray or dust should be applied every ten days throughout the growing season to secure satisfactory control.

If you have any problems during the growing season, do not hesitate to call upon me.

Yours for a higher yield per acre,

County Agent

Fairs

Fourteen fairs were attended during the past year and products were judged at all of them. The fairs attended were as follows:

Tri-County Fair	Petersburg, Va.
Varina Fair	Varina, Va.
Westmoreland County Fair	Montross, Va.
Lancaster County Fair	Kilmarnock, Va.
Smyth County Fair	Marion, Va.
Chesterfield County Fair	Chesterfield, Va.
Essex County Fair	Tappahannock, Va.
Keller Fair	Keller, Va.
Fairfax County Fair	Fairfax, Va.
Alleghany County Fair	Covington, Va.
Giles County Fair	Pearisburg, Va.
West Point Flower Show	West Point, Va.
Fall Garden Show	Hamburg, Va.
Virginia State Fair	Richmond, Va.

Potatoes and sweet potatoes were featured in the exhibit by this department at the State Fair this year. A discussion of the facts presented in this exhibit will be found under the respective projects.

Flower Clubs

Several flower clubs were addressed and several flower exhibits were judged by representatives from this department. In so far as possible this department is attempting to get away from flower work, but a considerable amount of it is still necessary.

Correspondence

Considerable time was given to answering correspondence. During the past year nearly 2,000 letters were written relative to the work.

Study

The Specialists here, at all times, strives to keep well informed on the latest subject matter relative to Vegetable Extension.

Publicity

Publicity is an integral part of every project. Numerous press articles were prepared and published in the Extension Division News, agricultural papers, newspapers, etc.

OUTLOOK FOR 1930

Much the same methods of carrying on the projects will be used in 1930 as were used in 1929. Since all the projects are on a long-time basis, no decided change in any one project is necessary. Such minor changes as best fit the work will be made. As a whole, the future of the work looks encouraging. Weak spots exist, but constant efforts are being made to strengthen them.

In the Potato Project, the Source of Seed Demonstration Plots will be stressed in Eastern Virginia. Work in other sections of the State will receive its share of time and attention. Club work in Alleghany will be stressed. Certification of Green Mountain potatoes will be continued.

In the Tomato Project, the Community Plant Beds, Good Seed, and Fertilization work will be stressed. In addition some "time of planting" demonstrations are planned.

In the Sweet Potato Project, storage house construction will be stressed. A close follow up will be kept on the houses already constructed. Inspection work for the Crop Improvement Association will be continued.

The Home Garden Project will be continued as a Major Project. The demand for this work and the results of the past year's efforts justify this.

Miscellaneous work will be given all the time that can be spared from other projects. Such work will include fertilizer demonstrations on asparagus, cantaloupe, cucumber and cabbage

The work will be carried on as in the past thru the County Extension Agents. Aid will be required from the United States Department of Agriculture in the following lines:

1. Publications and Other Literature
2. Information as to successful Extension Methods

STATISTICAL DATA

The following statistics are summarized from the monthly reports. The data are given for the personnel of the Vegetable Extension collectively rather than individually.

Days in field	238
Days in office	129½
Days annual leave	27
Different counties visited	55
Visits to county agents	96
Visits unassisted by agents	39
Visits to counties without agents	13
Visits to county home demonstration agents	36

Meetings attended	135
Total attendance at meetings	9280
Average attendance at meetings	67
Boys' or Girls' clubs visited	25
Total attendance at clubs	1015
Average attendance at clubs	21
Men's or Women's Clubs visited	15
Total attendance at clubs	680
Average attendance at clubs	45
Farmers Institute and Tours attended	9
Letters written	1978
Different circular letters written	24
Number of circular letters sent out	20814
Average distribution	1198
Demonstrations given	305
Attendance at demonstrations	1715
Miles traveled by auto	16365
Miles traveled by rail	21420
Miles traveled by other means	564
Total miles traveled	38007

Potato Project

Counties visited	13
Meetings attended	11
Attendance at meetings	1501
Tours attended	3
Source-of-Seed Demonstration Plots	5
Potato club members worked with	75
Exhibits prepared	5
Acres inspected	83
Acres given for certification	83
Approximate bushels certified	1000

Sweet Potato Project

Counties visited	16
Meetings attended	6
Attendance at meetings	213
Demonstrations given	26
Number of certified seed growers	3
Bushels bedded by certified growers	1361
Acres given for certification	132 7/8
Plant bed inspections	38
Field inspections	28
Bin inspections	12

Bushels submitted for inspection by growers	111,[illegible]
Bushels certified	10[illegible]
Storage houses constructed since project began	45
Total capacity of all houses constructed	112,[illegible]
New houses constructed this year	8
Capacity of new houses constructed	10,000
Storage house plans sent out	17
Sweet potato exhibits prepared	2

Tomato Project

Counties visited	16
Meetings attended	7
Attendance at meetings	278
Community plant beds	25
Plants used from beds	787,000
Acreage set from beds	275
% of state's acreage set from beds	4
% of Lancaster county acreage set from beds	25
% of Westmoreland county acreage set from beds	15
% of Northumberland county acreage set from beds	8
Fertilizer demonstrations	13

Home Garden Project

Counties receiving definite aid	36
Counties visited	27
Meetings attended	39
Total attendance at meetings	2,135
Average attendance at meetings	30
4-H Clubs met	28
Attendance	1,016
Adult Clubs met	10
Attendance	201
Short Courses attended	2
Attendance at Short Courses	212
Distribution of Circular H-208 to date	20,000
Circular letters prepared	7
Total distribution of circular letters	21,981
Average distribution of circular letters	3,151
County Agents using letters	18
County home demonstration agents using letters	25
Negro agents (men) using letters	0
Negro agents (women) using letters	0
Garden contests staged	12
Visits to contest gardens	295
Gardens judged in West Virginia	150

Ounces of free spinach seed distributed	[illegible]
Ounces of free kale seed distributed	[illegible]
Number of demonstrators receiving seed	[illegible]
Number 10-lb. sacks Nitrate of Soda furnished to demonstrators	20
Institutions aided	3

Minor Projects

Dusters furnished for bean beetle control	7
Circular letters written on Bean Beetle Project	3
Fertilizer demonstration on Asparagus	1
Circular letters to asparagus growers	1
Cucumber growers aided in Prince Edward County	42
Meetings with cucumber growers	3
Circular letters to cucumbers growers	3
Fertilizer demonstrations on cabbage	3
Fairs judged	24
Fair exhibits prepared	3

Respectfully submitted,

L. B. Dietrich,
In Charge of Vegetable Extension

LBD:CH