

VEGETABLE GARDENING SPECIALIST ANNUAL REPORT 1928

L. B. Detrick

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ANNUAL REPORT

1925

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

By L. B. Dietrick

Horticultural Department, V. P. I.



Hacksburg, Virginia.
December 1, 1925.

Mr. J. R. Hatcheson, Director
Extension Division,
Hacksburg, Virginia.

Dear Sir:

I beg to submit, herewith, the third annual report of the work in Vegetable Extension, Department of Horticulture, for the period beginning December 1, 1924 and ending November 30, 1925.

PERSONNEL

Any change tends to upset for a time the normal rate of progress. This year the work has been handicapped by the resignation of A. G. Smith, Jr., Specialist, employed three-fifths time. Mr. Smith had charge of the work until July 1st., at which time he resigned to accept a position with Fallon, the Florist, at Roanoke, Virginia. Since July 1st. L. B. Dietrick, Vegetable Specialist, employed three-fifths time, has been in charge of the Vegetable Extension. Both were ably assisted by L. C. Kemmer, Assistant Vegetable Specialist, employed full time.

GENERAL DISCUSSION

In a brief review of the work of the past year the writer sees much that remains to be accomplished. At the beginning of the year a plan of work was outlined and definite goals set for attainment. These goals were all in harmony with Virginia's Five Year Program and constituted some of the initial steps for that period.

Some of the goals have been reached and some are yet to be attained. The reasons for attainment or non-attainment are many and varied. Virginia this year has suffered the most severe drought in years. This has greatly reduced production and has seriously interfered with some of the projects, particularly with that of tomatoes. In some isolated cases lack of local cooperation has hindered the work. The loss of Mr. Smith, together with the necessity of the new specialist gaining a knowledge of the projects and making contacts with individuals and committees, has of a necessity slowed up the work to some extent. But as a whole the

work has gone forward and, though much still remains to be accomplished, much has been accomplished over the period embraced in the report. This will serve as a sound basis for future development.

As set forth in the report of last year, the time of the Vegetable Specialists has been devoted largely to the three leading vegetable crops of the State; namely, potatoes, tomatoes and sweet potatoes. Naturally much consideration has been given to other crops as well but the projects and outline of work have been built up around the three crops mentioned. Whenever possible the specialists have answered calls in person, regardless of what type of vegetable industry the call was concerned. In addition, hundreds of letters have been written, conveying information on the various vegetable crops to the growers. Due to necessity considerable time has been devoted this year to the control of the Mexican Bean Beetle in Southwest Virginia. This pest has become a matter of serious economic importance to Virginia and as much time as possible is being devoted to furnishing committees with methods for its control. The report on the work of the past year with this insect is given later in this report.

For all projects calls have led the specialists into thirty-three counties of the State during the past year. These counties are shown on the accompanying map.

As in previous years, demonstrations have been made whenever possible. This has enabled the specialists to continue the policy of the Department, "to serve the Many rather than the Few." Individuals, of course, have been given attention but in so far as possible the work has been planned and carried out with the purpose of serving committees rather than individuals. For that reason the demonstration method has seemed the best and has been used almost entirely. These demonstrations have been carried out largely through the aid of county agents, home demonstration agents, Smith-Hughes teachers and various organizations in the different communities. In Accomac County the Eastern Shore Produce Exchange has given valuable assistance in carrying out the projects of this Department; in Northumberland County the specialists have worked in close cooperation with the Open River Tomato Association. The Virginia Seed Service and The Southern Produce Company have aided in the distribution of the mountain seed to the growers. To a lesser extent organizations in other counties have been of help to the specialists from time to time. In some instances where none of the above facilities existed, the specialists have continued the policy of forming contacts with influential people of the community and

through them have attempted to carry out a project.

In pursuance with the policy set forth in the last report the specialists have attempted to secure the best and latest information available for the growers of Virginia. As in previous years, leaders in many states, where similar work was being done, have been consulted and two out-of-state meetings have been attended to gather information of value to Virginia farmers. One trip has been made through North and South Carolina to observe the handling of the sweet potato crop. Much time has been given to reading and studying of subject matter so that the specialists at all times might be better fitted to serve the growers. Close contact has been kept between the forces here at Blacksburg and the staff of the Virginia Truck Experiment Station, at Norfolk, Va. The Experiment Station has served as a source of valuable information for all the projects and more particularly for those related to Eastern Virginia.



Farmers Inspecting Source of Seed Demonstration Plot in Eastern Va.

OUTLINE OF PROGRAM - VIRGINIAN GARDENING - 1928

I - POTATO PROJECT

A - The production of early potatoes in Eastern Virginia

- 1 - Demonstration plots**
 - a - Source of seed
 - b - Seed treatment
 - c - Soil improvement
- 2 - County tours**

B - The production of potatoes in other parts of the State

- 1 - Club work**
 - a - Use of good seed
 - b - Identification of varieties
 - c - Identification of diseases
 - d - Demonstrations in roguing
- 2 - Home and Market production**
 - a - Use of good seed
 - b - Spraying and dusting demonstrations
 - c - Identification of varieties
 - d - Fertilizer demonstrations
 - e - Grading demonstrations

C - Production of certified seed potatoes

- 1 - In Eastern Virginia (2nd. crop)**
- 2 - In mountains of Virginia**

II - SWEET POTATO PROJECT

A - Seed production

- 1 - Demonstrations in seed selection and seed treatment**
- 2 - Inspection of seed-beds, fields and storage houses**

B - Crop production and storage

- 1 - Use of disease-free seed
- 2 - Demonstrations in seed treatment, fertilizers, harvesting and grading
- 3 - Study of varieties
- 4 - Construction of new storage houses
- 5 - Remodeling old houses
- 6 - Disinfecting storage houses

III - TOMATO IMPROVEMENT

A - Canning crop

- 1 - Community seed beds
- 2 - Use of reliable seed
- 3 - Demonstrations in transplanting, soil improvement, fertilizers, wilt resistance and cultivation
- 4 - Grading demonstrations at cannery
- 5 - Selection of plants for seed
- 6 - Club work

B - Production of green-tomatoes

- 1 - Variety demonstrations
- 2 - Seed-bed disinfection
- 3 - Hot-bed construction
- 4 - Soil improvement and fertilizer demonstrations
- 5 - Demonstrations in seed selection
- 6 - Club work

IV - SPECIAL PROJECTS

- A - Mexican Bean Beetle control
- B - Home garden work
- C - Garden Club work

POTATO PROJECT

The potato project has followed the three general lines shown in the plan of work for 1925; namely, the Production of Early Potatoes in Eastern Virginia, the Production of Potatoes in Other Parts of the State, and the Production of Certified Seed Potatoes in Southwestern Virginia and the Valley.

In many ways the year has been an extremely hard one for the potato growers. A dry season such as the State has not experienced in years and the potato crop in some places from one-third to one-half and in many places the growers were fortunate if they secured their seed. Germination was poor because of the drought, ranging from 85% to as low as 20% in some instances. Due to the extremely dry season the fertilizer applied did but little good, remaining on the ground and not going into solution throughout the entire season. The writer has observed in many fields, as the potatoes were being dug, that the fertilizer lay in the furrow in a gray line, as applied early in the spring. This, together with the dry season mentioned, constituted the main cause for the extremely low production of this year.

The potato growers on the Eastern Shore of Virginia were hit by an additional plague, as well as by the drought. The potato tuber rot, which has been known on the Shore to some extent in past years, found weather conditions so ideal this year that it spread rapidly and caused thousands of dollars damage.

The insect works first as a leaf miner, attacking the foliage of the plant. Later it goes down into the tuber and causes a wormy, unmarketable potato, which rots easily and is uneatable. The price of potatoes last year was so low that many farmers dumped large piles of potatoes in the woods. As the price failed to improve the potatoes were left to rot and formed excellent winter quarters for the pest. With the advent of spring the worms were there in large numbers and ready to attack the new crop. Cultural practices on the Shore have proven favorable to the spread of the pest. Many growers practice planting of corn between the potato rows. As the corn is cultivated the dirt is dragged away from the potato row, leaving the tubers covered with but a shallow coating of dirt, thus affording the worms an excellent opportunity to enter the tubers. A second practice has been to leave the potatoes in the field over night. Potatoes so harvested here, in the past, showed a less amount of rot in shipment and

storage then have these picked up immediately after digging. However, the practice has also been conducive to damage by the moth. The moth flies largely at night, deposits its eggs upon the potatoes left in the field and the eggs hatch in shipment. The potatoes thus come on the market infested with worms. A third practice has been to cover the tops of the barrels in the field with potato vines to protect the tubers from the sun. This has also resulted to the injury of the potato grower. As the plants are dried out by the sun the worms work their way down into the potatoes in the barrel. During the past season the grower who got his potatoes out of the ground early and who picked them up as soon as dug suffered the least damage while some who waited for better prices, while his neighbor dug, suffered an entire loss of crop, due to the moth.

Relief measures were worked out largely by Professor V. J. Johnson, State Entomologist, the Norfolk Truck Experiment Station, County Agent Strong and the Eastern Shore Produce Exchange. A copy of their recommendations is included in this report.

In contacts with growers on the Eastern Shore the specialists have in every instance tried to pass on these control measures to the individual growers.

The year, however, has had one good effect throughout the State in that it has emphasized the importance of land preparation and cultural practices. The farmer this year who had potatoes in land of good physical condition, who had worked this land up into a good seed bed and who cultivated thoroughly throughout the season, to conserve the little moisture that was available, oftentimes secured a crop where the farmer next to him had a complete failure. Wherever possible the specialists have pointed out this fact and have tried in every way to emphasize the fact that land preparation and cultivation play a far larger part in crop yields than the average farmer gives the credit for.

A second bright spot during the past year for the potato grower has been the prevailing high prices throughout the entire State. In many instances the grower with half a crop realized more for them than he did last year with double the crop. Cultural practices, of course, cost as much when the yield is but half the normal yield but the grower saved in the marketing cost as well as being benefitted by the higher price.

... IN ...
AGRICULTURE AND HOME ECONOMICS

STATE OF VIRGINIA

Onley, Va.

October 31, 1925.

CONTROL THE TUBER MOTH

Potato shipments from the Eastern Shore of Virginia, will probably be embargoed next year if wormy potatoes are shipped on the market.

Prevent wormy potatoes next year by starving the tuber moth this winter.

The tuber moth largely lives over winter in potatoes of both the first and second crops. The only methods known at present of control that can be recommended are: (a) destroying all cull potatoes from both the first and second crops; (b) kill worms and eggs in slightly infested potatoes, and (c) protect clean potatoes from the attacks of the moths.

FOLLOW THESE DIRECTIONS

Harvesting—If the second crop of potatoes yet to be harvested are not covered with at least three or four inches of soil, plow another furrow of soil over them and do not dig as long as it is safe to leave them in the ground.

Gather all potatoes immediately behind the plow. Cover the barrels as soon as filled and haul them indoors. Sort out wormy potatoes in so far as possible and destroy them before storing.

Storing—Storage in houses, cellars or insulated rooms is recommended. Potatoes should be stored in barrels. The storage room should be fitted for ventilation with windows or other outlets, and the temperature should be kept above freezing and below 50 degrees.

Storing in kilns is not recommended as fumigation is difficult, but if kilns must be used, store in barrels by placing a row of barrels end to end lengthwise of the kiln—these will lie on their side. Place another row of barrels on either side with ends leaning on the first row of barrels and the bottoms on the ground. Lay a fourth row of barrels on their sides directly above the first row placed. These will fit into the space left between the tops of the side rows of barrels as they lean against the bottom row. An opening should be left at each end of the kiln so that they may be ventilated at nights or cool days.

Fumigation—Fumigation of Houses. Get into touch with W. O. Strong, County Agent, Eastern Shore Experiment Station, Onley, Va., Phone Onancock, 115 F 12, who will fumigate the potatoes in the houses with hydrocyanic acid gas, charging the farmer only the actual cost of material. Potatoes should be fumigated within a few days after they are stored in the houses. Need of additional fumigations will be determined by state workers at request of farmers.

Fumigation in Kilns is not so satisfactory as in houses. Carbon bisulphid is used in the kilns. It is explosive when exposed to flame. Do not fumigate kiln unless advised to by county agent.

CLEAN UP OF CULLS

Fields Which Are Harvested should be harrowed and all exposed potatoes gathered. Sow to rye. Gather potatoes again as rains expose them.

Destroy Cull-Piles From First Crop by throwing them in salt water or bury in plowed ditch and cover at least ten inches deep. All cull piles must be destroyed at once or the moth will be abundant next year.

Gather and destroy all culls scattered in fields in which first crop was grown.

Every Farmer Should Feel Personally Responsible for the potatoes on his farm. No one else can do the work for him. Every one should take immediate steps to clean up his own place and influence his neighbor to do the same.

W. O. STRONG, County Agent

CAUTION

POTATO WORM

Reduce Infestation

1. Plow out potatoes only as fast as they can be picked up so moth will not lay eggs on them.
2. Destroy all badly infested potatoes.
3. Thoroughly drag ground after digging and pick up all potatoes, even the *smallest*, and destroy them.
4. Plow all abandoned fields of second crop potatoes, drag, and pick up all potatoes. Sow to rye.
5. Store in cool well ventilated, screened storage-houses or cellars. Clean and fumigate infested storage-houses before storing.
6. If necessary to store in kilns, cover well in fields and dig after cold weather. Place ventilators at both ends of kilns.
7. Ventilate houses and kilns on cool nights to keep temperature below 50 degrees. Moths are less active at low temperatures.

For further information, communicate with

W. O. STRONG, Co. Agent.

Eastern Shore Experiment Station, Onley.

Seed Potato Work: The seed potato production has been carried on during the past year in Essex, Will, Gloucester and Hants County. This work has been concerned with the production of two varieties, Irish Cobblers and V. F. L. Green Mountain. The Cobbler seed has been produced in the first two counties and the Green Mountain seed in the last three counties. The present discussion will relate entirely to the Irish Cobbler. The Green Mountain seed will be discussed later in the report.

Seed stock of the Irish Cobblers was sent to Hants, Essex, Gloucester, Hants, and Hants Counties. The results of this distribution are discussed in the body of this report.

Potato Demonstration - Source of Seed: Demonstration plots of Irish Cobbler mountain seed were conducted during the past year in Hants and Gloucester Counties. The plots were discontinued in Hants County as mentioned in the Plan of Work for 1925, due to a lack of interest on the part of the growers in that county. Individuals in Gloucester planted some of the mountain seed but no demonstration plots were carried out.

Source of Seed Demonstration Plots - Gloucester County: The plots were carried on according to the plan outlined in the Annual Report of 1924. Six plots were planted but complete data was secured on but five, due to the fact that one grower dug the plot located on his farm without notifying the County Agent or the specialist.

Seed was planted from the following sources:

- 1 - Prince Edward Island
- 2 - Prince Edward Island Home Grown
- 3 - Maine Certified
- 4 - Maine Certified Home Grown
- 5 - South Dakota
- 6 - Northern Michigan
- 7 - Southern Michigan
- 8 - Minnesota
- 9 - Minnesota Home Grown
- 10 - Virginia Mountain 3000 Ft.
- 11 - Virginia Mountain 2100 Ft.

- 12 - New York
- 13 - Wisconsin
- 14 - Highland County, Virginia

The Virginia Truck Experiment Station furnished the seed from many of the sources named and one plot was conducted on the Station Farm, at Galley. The other five were located on farms in the following communities:

Backpage
Mappeville
Mappeville
Horstow
Oak Hill

The plots were located, as in previous years, on a part of potato fields easily accessible for inspection. Rows were 100 feet long in each case and exactly the same number of seed pieces were dropped in each row. The fertilization, cultivation, etc., was the same in all instances. In all plots, except the one which was mentioned as being dug without the County Agent or specialist being notified, careful records were kept by the specialist and the County Agent. Unfortunately there was not on hand sufficient seed from some of the sources to include seed from that source in every plot planted.

The yields of the several plots on the Eastern Shore have been computed in terms of barrels per acre and are given on the next page.

AVERAGE OF 5 PLOTS

Source of Seed	Yield - Barrels per Acre		
	Prings	Secunda	Total
Prince Edward Island	39.45	12.57	52.02
Prince Edward Island Home Grown	33.09	11.92	45.01
Maine Certified	49.61	15.04	64.65
Maine Home Grown	27.43	11.56	38.99
South Dakota	41.76	15.34	57.10
Northern Michigan	41.26	12.57	53.83
Minnesota	38.78	15.53	54.31
Virginia Mountain 3000 Ft.	34.26	14.59	50.87
Virginia Mountain 2100 Ft.	33.69	14.49	48.18

The above nine sources of seed occurred in all five plots.

AVERAGE OF 4 PLOTS

Prince Edward Island	40.68	12.60	53.28
Prince Edward Island Home Grown	33.14	11.29	44.43
Maine Certified	50.93	15.85	66.78
Maine Home Grown	29.95	10.25	40.21
South Dakota	42.94	15.56	58.50
Northern Michigan	43.68	9.72	53.40
Minnesota	42.94	11.64	54.58
Minnesota Home Grown	40.68	8.15	48.83
Virginia Mountain 3000 Ft.	35.78	13.68	49.46
Virginia Mountain 2100 Ft.	34.68	14.22	48.90

The above average is to show the comparative yield of Minnesota Home Grown with other sources of seed. The seed was used in all five plots but one plot the grower dug several hills of Minnesota Home Grown while harvesting his main crop. Comparative records could be kept, therefore, on but four plots for Minnesota Home Grown.

AVERAGE OF 5 PLOTS

<u>Source of Seed</u>	<u>Yield - Bushels per Acre</u>		
	<u>Prime</u>	<u>Seconds</u>	<u>Total</u>
Prince Edward Island	41.88	11.20	53.08
Prince Edward Island Home Grown	37.88	15.12	53.00
Maine Certified	52.09	14.01	66.10
Maine Home Grown	37.13	12.75	50.88
South Dakota	42.86	12.83	55.69
Northern Michigan	43.20	14.56	57.76
Southern Michigan	44.32	11.04	55.36
Minnesota	36.96	13.76	50.72
New York	45.88	10.40	56.28
Virginia Mountain 3000 Ft.	43.20	13.76	56.96
Virginia Mountain 2100 Ft.	35.36	15.04	50.40

The above average is to bring out the comparative value of Southern Michigan and New York seed, which occurred in three only of the five plots.

AVERAGE OF 2 PLOTS

Prince Edward Island	46.80	10.20	57.00
Prince Edward Island Home Grown	40.08	13.92	54.00
Maine Certified	50.08	13.92	64.00
Maine Home Grown	25.03	14.32	39.35
South Dakota	47.07	13.63	60.70
Northern Michigan	44.40	16.90	61.30
Southern Michigan	45.08	11.76	56.84
Minnesota	37.44	13.36	50.80
New York	41.52	12.48	54.00
Wisconsin	32.40	13.92	46.32
Virginia Mountain 3000 Ft.	43.24	15.60	58.84
Virginia Mountain 2100 Ft.	36.40	18.64	55.04

The above average is to bring out the comparative yield of Wisconsin seed, which occurred in two plots only.

AVERAGE OF 1 PLOT

Source of Seed	Yield - Barrels Per Acre		
	Primes	Seconds	Total
Prince Edward Island	34.55	15.32	50.88
Prince Edward Island Home Grown	29.52	11.08	40.60
Maine Certified	38.40	12.94	51.34
Maine Home Grown	21.60	10.56	32.16
South Dakota	42.24	13.44	55.68
Northern Michigan	25.28	9.60	34.88
Minnesota	45.96	12.48	58.44
Minnesota Home Grown	35.04	9.12	44.16
Highland County, Virginia - Lot 3	22.08	12.00	34.08
Highland County, Virginia - Lot 2	34.08	10.56	44.64
Virginia Mountain 3000 Ft.	27.84	14.32	42.16
Virginia Mountain 2100 Ft.	36.00	12.48	48.48

The above average is to show the comparative yield of Highland County, Lots 2 and 3, which occurred in one plot only. This seed was included in this plot upon the request of the grower in Highland County and was not certified.

An examination of the above records of these plots show that out of the nine sources of seed planted, in all five of these plots, Virginia Mountain 3000 ranks sixth in yield of primes, outyielding Prince Edward Island Home Grown, Maine Home Grown and Virginia Mountain 2100, holding well up with Minnesota and Prince Edward Island but falling behind Northern Michigan, South Dakota and Maine Certified. The Virginia Mountain 2100 ranks 7th or just below Virginia Mountain 3000, both in yields of primes and in the total yield.

When total yields (primes and seconds) are considered Virginia Mountain 3000 still ranks sixth, outyielding the same sources of seed as when primes are considered, holding well up with Prince Edward Island, Northern Michigan, Minnesota and is outyielded substantially by two sources of seed - Maine Certified and South Dakota. This comparison is brought out because in most instances the mountain seed germinated earlier and, therefore, matured earlier than did the other seed. For these nine sources of seed the comparative yield holds practically the same as above, regardless of whether five or less than five plots are considered.

In an examination of the average of four plots it will be seen that both Virginia Mountain 3000 and Virginia Mountain 2100 outyielded Minnesota Home Grown in total yield by somewhat less than a barrel per acre but it will be seen that in yield of primes Virginia Mountain 3000 and Virginia Mountain 2100 were both outyielded by Minnesota Home Grown by about five barrels per acre.

In the average of three plots Virginia Mountain 3000 Ft. outyielded New York a little less than a barrel of primes per acre and was outyielded by Southern Michigan by slightly over a barrel per acre. In total yields Virginia Mountain 3000 outyielded both New York and Southern Michigan. Virginia Mountain 2100 in the same plots was outyielded by both New York and Southern Michigan in barrels of primes and total yield per acre.

In the average of two plots Virginia Mountain 3000 and Virginia Mountain 2100 both outyielded Wisconsin by a substantial margin, regardless of whether primes or totals are considered.

The Virginia Mountain 3000 Ft. seed for these plots was grown in Highland County on the farm of E. C. Grummett, 47 miles from a railroad and exceedingly hard to reach. The seed was planted early and matured early, which was possibly to its disadvantage. This point is mentioned because the seed planted in the plots in Princess Anne County was grown in Taswell County. The seed was planted later and matured later than that grown in Highland. The Virginia Mountain 2100 Ft. seed in both counties came from Giles County. The seed germinated before planting and the treatment of the seed with sublimate delayed its germination.

Sources of Seed Demonstration Plots - Princess Anne County: The demonstration plots were conducted in Princess Anne County in similar manner to those in Accomac County. Sources of seed used in these plots were:

- 1 - Prince Edward Island
- 2 - Prince Edward Island Home Grown
- 3 - Maine Certified
- 4 - Maine Home Grown
- 5 - Wisconsin
- 6 - South Dakota
- 7 - Virginia Mountain 3000 Ft.
- 8 - Virginia Mountain 2100 Ft.
- 9 - Maine (not certified)

The plots were located in the following places:

Beck Bay
Cocoma
Princess Anne

As in the case of Accooma County the yields are computed in barrels per acre and are as follows:

AVERAGE OF 3 PLOTS

Source of Seed	YIELD - Barrels per Acre		
	Primes	Seconds	Total
Prince Edward Island	77.15	7.39	84.54
Prince Edward Island Home Grown	80.80	6.16	86.96
Maize Certified	48.48	6.78	55.26
Maize Home Grown	43.78	6.88	50.66
Wisconsin	54.72	6.58	61.30
Virginia Mountain 3000 Ft.	64.40	8.44	72.84
Virginia Mountain 2100 Ft.	44.86	8.52	53.38

The above sources of seed occurred in all three plots.

AVERAGE OF 2 PLOTS

Prince Edward Island	67.08	8.40	75.48
Prince Edward Island Home Grown	85.92	6.94	92.86
Maize Certified	41.70	6.66	48.36
Maize Home Grown	37.81	7.78	45.59
Wisconsin	46.80	7.68	54.48
South Dakota	50.40	8.64	59.04
Virginia Mountain 3000 Ft.	56.40	8.76	65.16
Virginia Mountain 2100 Ft.	38.72	8.16	46.88
Maize (not certified - 1 plot only)	30.72	8.76	39.48

The above average is to show the comparative yield of South Dakota, which occurred in but two plots and of Maize (not certified), which occurred in one plot.

In an examination of the average of three plots it will be seen that Virginia Mountain 3000 Ft. ranks second in both the yield of primes and total yield, being

outyielded by Prince Edward Island only and outyielding Prince Edward Island Home Grown, Maine Certified, Maine Home Grown, Wisconsin and Virginia Mountain 2100. Virginia Mountain 2100 ranks sixth in these plots.

The relative standing of both Virginia Mountain 3000 and Virginia Mountain 2100 remains the same when a lesser number of plots are considered.

In an examination of two plots it will be seen that Virginia Mountain 3000 outyielded South Dakota seed by a large margin, regardless of whether the yield is considered as yield in price or total yield. Virginia Mountain 2100 is considerably outyielded by South Dakota Maine (not certified) failed to come up to either Virginia Mountain 3000 or Virginia Mountain 2100.

In addition to the demonstration plots in Accomac and Princess Anne Counties a carload of Virginia Mountain 2100 Ft. seed was shipped to the Southern Produce Company, Norfolk, Va. Ninety-five bags of this seed was shipped to Accomac and Northampton Counties and the remainder was distributed in Norfolk, James City, Nansemond and Princess Anne Counties. These plots were inspected twice, once by Mr. Deener and once by Mr. Bruce Sherrine, under the direction of this office, and in both instances records were taken. Germination, due to weather conditions and probably to some extent to storage, was only average, though holding up well with other sources of seed. Germination averaged a week earlier than seed from other sources but went down at an earlier date.

As a whole the reaction to the Virginia Mountain 2100 Ft. seed has been unfavorable, though here and there a grower states that the seed held up well with that from other sources. Mr. P. E. Bell, of Machipongo, planted some of this seed and states that on his farm they yielded well up with the other seed planted.

Annual Potato Tour: The third annual potato tour was arranged by the specialist with the aid of the County Agent and the Accomac County Farm Bureau. The tour was conducted in conjunction with the Poultry Department and was attended by about 200 people.

The demonstration plots were visited and explained by the specialist. Appreciate talks were made by Director Johnson, of the Norfolk Truck Experiment Station, Director Hutchison, of the Virginia Extension Service, Dr. William Stewart, of the U. S. Department of Agriculture, Dean H. L. Price, of the Virginia Agricultural College and others. The tour proved thoroughly instructive.

PROGRAM

Agricultural Tour

Accomack County, Virginia
June 16, 1925

Purpose:

To observe the source of Potato Seed and benefits of seed treatment, demonstrations in various parts of the county, observe general truck and poultry farm operations, inspect the tests and experiments at the Eastern Shore Experiment Station and to discuss our common problems.

CONDUCTED BY

Extension Service of Virginia, Eastern Shore Experiment Station and
the Accomack County Farm Bureau Co-operating

PROGRAM

Tuesday, June 16, 1925
Tour Accomack County

In the source of Cobbler Seed Demonstration Plats there are two rows 100 feet long of each strain. These are separated by one check row planted with the farmers general seed.

7:30 A. M.—Assemble at farm of Jas. H. Rowley, east of Horntown. Here are Cobblers from 10 different sources.

8:30 A. M.—Arrive at Martin Hall's farm near Honey Post Office. Assemble around plat as soon as possible. Prof. A. G. Smith of V. P. I. will explain the seed demonstration work. Inspect the plat of 12 strains of Cobblers. Home mixed fertilizer used. Spraying with 4-4-50 Bordeaux to demonstrate control of blight on late potatoes. Note disease-free general crop due to severe field rognosing of seed last fall.

J. L. Taylor's farm across the road. Seed treated with corrosive sublimate to control scab and rhizoctonia. Getting started with white leghorns. Observe houses, laying flock and young stock. Prof. A. L. Doss of V. P. I. will make a few remarks on housing, managing the growing flock, etc.

10:15 A. M.—Arrive at R. Finley Masons farm 1 mile south of Mapleville. Inspect plat with 13 strains of Cobbler seed.

11:00 A. M.—Arrive C. H. Poulson's farm 1 mile west of Nelsonia, where eleven strains of Cobbler seed are demonstrated.

12 noon—Arrive at J. Norman Bellet's truck farm. Note line of implements and shelter; onions on left intercepting strawberries, both crops put out in February; pumpkins, watermelons and early Fordhooks on right.

12:15—Arrive Accomack Duck Farm, W. R. Moser, prop. 4,000 ducklings 4 to 10 weeks old in various pens, 650 White Leghorn chicks 5 weeks old, using brooder following ducks.

PROGRAM

Tuesday, June 16, 1925
Tour Accomack County

1:00 P. M.—Arrive Eastern Shore Exp. Station, 1 mile south of Onley. Picnic lunch on the lawn. Sandwiches and refreshments will be sold on the grounds by the ladies of the Onley M. E. Church.

2:00 P. M.—Address of welcome by Prof. T. C. Johnson, Director of the Eastern Shore Experiment Station. Short talks by Director J. R. Hutchinson, of V. P. I. Extension Division; Dr. Wm. Stewart, U. S. Dept. of Agr.; Dean H. L. Price, Virginia Agricultural College, and others.

2:00 P. M.—Inspection of demonstrations and experiments.

Fertilizer Brand Test, consisting of commercial brands of 7-4-5, compared with Farm Bureau open formula.

Source of Seed Demonstration 13 strains of Irish Cobblers. Triangulation fertilizer test. This is an extensive test of 63 different plats of fertilizer, used continuously on the same ground for seven years in a three year rotation of Irish Potatoes, Corn and Sweet Potatoes.

Salt, Potash and Sulphur test with Sweet Potatoes.

Three varieties of Sweet Potatoes are used at this station, Elsey's Big Stem Jerseys, Little Stem Jerseys and Porto Ricco. Selection for type and yield improvement is carried on with little Stem Jerseys and Porto Ricco.

Tests are being started with new varieties of strawberries and disease resistant cabbage and tomatoes.

4:00 P. M.—Leave for J. E. Willis truck farm at Wachapreague. Inspect source of seed plat and other crops.

and interesting to all and served to call the attention of the people of Accomac County, as well as others, to the projects being carried on with potatoes.

Mountain Seed Potatoes The work on producing mountain seed potatoes was carried on along the same line as outlined in the plan of work for the year. Plantings were made in Giles, Montgomery, Fausell and Haysborough Counties. The work was discontinued in Highland County, due to the inaccessibility of the county and Haysborough County was added. In pursuance with the policy of the Department the growers have been encouraged to plant at least five acres in order that the size of the project will be sufficient to demand careful attention and interest.



Field of Virginia Mountain Grown Seed Potatoes

The growers of this mountain seed suffered this season as did all other potato growers from the drought. For that reason land preparation and cultivation has been stressed in all cases. Assistance has been given in all the problems relating to the production of seed potatoes. As in previous years the growers were helped in the selection of the field for potatoes, treatment of seed for disease control, preparation of soil and the use of fertilizers, cultural practices, seed cutting and planting, identification of diseases and varieties, and weeding, spraying, harvesting, grading, storage, purchase of equipment, etc.

In grading the potatoes this year, as last, the Grades and Specifications adopted by the Virginia Crop Pest Commission were used. The Crop Pest Commission, cooperating with this office, issued the certificates of certification to the growers upon submission of the specialist's report on the acceptability of the potatoes to be certified.

The plans for increasing the planting in Burke Garden, Russell County, were carried out this year. A total of approximately 19 acres were planted. Due to weather conditions the crop at Burke Garden was cut at least in half. However, the growers produced about 2100 bushels of Irish Cobbler Potatoes. Due to the early maturing of the crop, the high prices being paid for table stock, the tuber with in Eastern Virginia, as well as to other factors, it has been thought best not to place any excessive amount of Virginia Mountain 3000 Ft. seed in Eastern Virginia for next year. Most of the seed has been sold for table stock but enough has been reserved to plant the demonstration plots and to place a small amount of this seed with a few individual growers in Eastern Virginia, where its performance will be watched during the next season.

During the year a party of farmers from the Eastern Shore and the County Agent were taken to Burke Garden by the specialist. They viewed the fields of seed potatoes and expressed themselves well pleased with the possibilities of Burke Garden as a source of high grade seed for Eastern Virginia.

The Virginia Mountain 2100 Ft. plantings in Giles and Montgomery Counties matured exceptionally early; in fact, were killed by the dry spell and only enough of the seed for the demonstration plots will be sent to Eastern Virginia for next year's planting.

V. P. I. Green Mountain Seed: The V. P. I. Green Mountain Seed was produced in Giles, Montgomery and Rappahannock Counties. Part of this seed will be handled by the Virginia Seed Service while in some instances the growers themselves prefer to market the seed direct. The Virginia Seed Service handled the seed during the past year, entirely, and through them the writer secured a list of all the growers to whom they furnished this seed during the past year. Letters were written to all these growers asking them for their reaction to the seed. The replies have been almost unanimous in favor of the seed. Naturally the season has cut the yield but in comparison with other varieties the yield has held up equally as well if not better.

V. P. I. Green Mountain is not a potato best fitted for the second crop in the Tidewater section; it is a variety more subject to injury from hot weather and drought than are the McCormick and some other varieties of an inferior table quality.



Spraying Virginia Mountain Green Seed Potatoes

In Tidewater section the germination of the seed for the second crop was not as good as that of some other varieties. Part of this was undoubtedly due to the inability of the Green Mountain variety to stand drought, as mentioned.

Part of it was also due to the handling of the seed. The seed was kept in cold storage until July; it was then shipped to the growers, who, in some instances, stacked the seed and held it for ten days or two weeks, waiting for favorable conditions for planting. The treatment alone would probably result in lower germination.

In Piedmont and western Virginia this variety has lived up to its reputation as an excellent yielding, high quality late potato.

SWEET POTATO PROJECT

As outlined in last year's report, the sweet potato project is divided into two minor or sub-projects - Seed Production and Crop Production and Storage. The discussion, of course, of both of these sub-projects demand the same attention as far as cultural practices are concerned but otherwise they should be treated separately. For that reason problems peculiar to each are discussed under the title of the appropriate sub-project.

The sweet potato growers this year suffered along with all the other farmers from the drought, though probably not as greatly as some. The main problems have been, as in past years, the control of diseases and storage. These problems are discussed in the body of the sweet potato project report.

During January of the present year L. C. Beamer, Assistant in Vegetable Gardening, made a trip through North and South Carolina in the interest of the sweet potato industry. The purpose of this trip was to gather information as to the methods used in grading, storing and shipping sweet potatoes as a basis for recommendations to be made to Virginia farmers who were suitably located for sweet potato production and storage. Much valuable information was gained from this trip and excerpts from Mr. Beamer's report, concerning this trip, are given below.

Notes were taken in each county visited and are briefly summarized here.

"Eleven sweet potato houses were visited in the five counties, their capacity being from 500 to 12,000 bushels.

All sweet potato storage houses visited were built of wood, after the U. S. Government plans, and stoves were used to maintain proper temperature.

All houses of large capacity are built at or near a railroad siding and are owned by individuals or companies that contract each year with a number of growers for their sweet potatoes.

All sweet potatoes are graded in the field into No. 1 and No. 2 grades. The jumbo grade and culls are not stored in the storage houses.

The No. 1 and No. 2 grades are packed in 5 peck crates in the field and are carried to the storage house and stored in the same crate. In this way they avoid rehandling so as not to bruise the tubers.

Now crates are used each year in which to store sweet potatoes and only a small per cent loss from disease was found in the storage houses.

Sweet potatoes are regraded when shipped from the storage house and are packed in five peck crates, and are labelled on end to show the grade of the crate and the name under which they are shipped.

Special features were noted in several places which might be used with profit by our growers. These points are being called to the attention of the county agents and growers by this office.

Tacking instruction cards in each house telling how to harvest, handle, store and cure sweet potatoes.

Using crates in which to store sweet potatoes instead of barrels or bins.

Using bushel crates or five peck crates in which to market sweet potatoes instead of barrels.

Proper grading of sweet potatoes before they are marketed.

It is the belief of this office that the recommendations made in the Five Year Program regarding sweet potatoes can be carried out more effectively in the light of the information gained on this trip.

Seed Production. During the past year the specialists have carried on sweet potato seed work in eleven counties. Approximately 1200 bushels of seed were treated under the direction of this office. Sixty-seven seed bed inspections, 43 field inspections and 20 bin inspections were made; 115 demonstrations were given and 42 house inspections were made. In the houses inspected were stored 47,873 bushels of seed, including both table and seed stock, under the supervision of this office.

is in the past the main problems in the seed production of sweet potatoes have been the control of diseases and the roguing out of varietal mixtures.

The control of diseases in the seed stock is a relatively easy matter provided proper attention is given to the crop from the time the seed is treated and bedded until the crop is harvested. The specialists have given numerous demonstrations this year in seed treatment for the control of Scurf and Black Rot. Hundreds of growers have been made acquainted with the control of Scurf through seed treatment and through avoiding the use of large quantities of stable manure on sweet potato fields just before planting.



Field of Sweet Potatoes Grown from Certified Seed in Eastern Virginia.

Over 100 acres of sweet potatoes have been gone over and demonstrations given to the growers in the recognition of Blue Stem.

The problem of varietal mixtures has offered greater difficulties. The chief varieties grown in the State are Honey Hill, Big Stem Jersey, Little Stem Jersey, Hayman, and Porto Rico. The specialists have given the growers of certified seed demonstrations in the recognition of these varieties. However, the average grower is handicapped by his inability to distinguish between root and leaf characteristics of similar varieties. In many instances though it has been possible to put over this information to a remarkable degree.

As in the past, much of the varietal mixture comes into the State through purchasing slips outside of the State. For that reason the encouragement given to the growers interested in building up a sweet potato slip business has been continued. Through the growth of this business it is hoped that ultimately Virginia can produce practically her entire supply of sweet potato slips and thus eliminate to a great extent the problem of varietal mixtures.

The work in Sussex and Prince George counties has been continued. The number of growers have increased from about 100 to 125 and an increased amount of seed is being produced. Their chief problem continues to be a varietal mixture which was introduced into the county years ago. Three growers are producing certified seed in this county. They have a plan whereby they dispose of this certified seed to the growers in the county in exchange for table stock. The individual growers secure good seed through this arrangement and the growers of the certified seed market the potatoes received in exchange.

A special item of interest in the control of varietal mixtures should be mentioned. This account is taken from the March report of A. G. Smith, Jr., Vegetable Specialist, and is as follows:

"At the request of Mr. G. S. Ellison, Inspector General for the Eastern Shore of Va. Produce Exchange, the writer examined a carload of Porto Rico sweet potatoes purchased for seed purposes from South Carolina. An inspection of the car showed that approximately 25% of the seed stock was of the Spanish type which cannot be grown and shipped as Porto Ricos. Officials of the Exchange and a group of farmers attended the demonstration given at the car by county agent Strong, L. C. Bonner and the writer. Means of identifying the Porto Rico and the Spanish varieties were pointed out, also the characteristics of the more common diseases. The management of the Exchange seemed to be much impressed by the demonstration and ordered the entire car to be carefully culled in order to eliminate the undesirable types. This part of the work

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

February 1, 1925

TREATING AND BEDDING SEED SWEET POTATOES

Prepared by A. G. Smith, Jr. and L. C. Reamer

Great losses occur annually as a result of sweet potato diseases, which affect the potato in the seed-bed, field or storage house. These destructive diseases may be controlled by carrying out the following suggestions:-

- (1) The seed stock to be used should be carefully selected.
- (2) For bedding purposes, select medium size roots, clean in appearance and typical of the variety to be used. Care should be taken ~~not~~ to use any sweet potatoes which have shriveled ends or black spots as these characteristics indicate presence of diseases. Seed treatment will not cure any disease already established in the sweet potato, but will only destroy the spores on the surface of sound roots which may be there as a result of rubbing against diseased specimens.

- (3) The seed potatoes should be disinfected before bedding by dipping them for ten minutes in a solution of Corrosive Sublimate made as follows:-

4 ounces of Corrosive Sublimate
32 gallons water

Dissolve the Corrosive Sublimate in a small quantity of hot water then pour into the larger container.

Make up the solution in a wooden container, as this chemical eats into metal. Place the sweet potatoes in a split basket or bag and dip them in the solution. They should be treated on a warm sunny day so that they will not become chilled. Eight gallons of solution will treat two and one-half bushels of sweet potatoes.

- (4) Immediately upon removal from the solution, the sweet potatoes should be placed in the seed bed. They should be bedded in clean sand or soil in which no sweet potatoes have been bedded before. If the plan-bed frame has been used for this purpose before, it should be disinfected thoroughly with a solution of Corrosive Sublimate of dipping strength before putting in new bedding soil.
- (5) If the implements to be used in handling bedding soil have been used before in handling old sweet potatoes, vines or old bedding soil, these should be carefully disinfected with a solution of Corrosive Sublimate of dipping strength.
- (6) If manure is to be used to supply heat for the beds, the grower should be sure that it does not come from stock which has been feeding on sweet potatoes or sweet potato vines.
- (7) Care should be exercised in covering the roots in the seed-bed. If too little sand or soil is placed over them, the bed dries out quickly and the roots fail to sprout. On the other hand, if they are covered too deeply, many of the sprouts fail to reach the surface. It is recommended that they be covered with sand to a depth of two to three inches above the upper surface.
- (8) The bed should be thoroughly drained by digging surface ditches on all sides.
- (9) It is necessary to keep the bed moist at all times for best results.

(10) All growing plants need air. Ventilate the beds every day if the weather will permit.

(11) Bedding sweet potatoes may be fed to animals after the plants are drawn from the bed without injury from the poison.

CAUTION: Corrosive Sublimate is deadly poisonous when taken internally, and care should be exercised to prevent stock from drinking the solution.

was supervised by Mr. Deamer."

Printed information has been furnished to the growers from time to time. One circular entitled "Planting and Bedding Seed Sweet Potatoes" was edited and distributed through the aid of county agents and others interested in the work. A copy of that circular is included in this report.

The certification of the sweet potato seed has been carried out as in past years by the Crop Pest Commission and the Vegetable Extension cooperating. During the past year the personnel of this office has inspected 181 acres of sweet potatoes for certification. The Crop Pest Commission will issue certificates of certification to those growers whose seed qualifies in the bin inspections.

Crop Production and Storage In the production of sweet potatoes for market the growers have been given practically the same information and demonstrations on the control of diseases as have been the producers of certified seed. Demonstrations have been given in all the cultural requirements of the crop. Information on crowding the crop to produce smaller tubers has been given to several growers who due to soil fertility, seasonal conditions, etc., were producing tubers too large for market demands. Demonstrations particularly with the handling and grading of the crop have been stressed.

The sweet potato storage work has been carried on in 12 counties during the past year. A fact, the importance of which is little recognized by the average grower, is that many of the problems in storage are a direct result of the improper handling of the crop in the field. To emphasize this fact and to disseminate this knowledge to the growers the Vegetable Extension had printed a circular entitled "Harvesting, Handling, Curing and Storing the Sweet Potato Crop". This information was contained on a card 7"x14", which could be conveniently tacked up in the storage houses where the information would be available at all times. These placards were sent to the county agents and individuals for distribution. In recent trips the writer has noticed many of these cards conspicuously tacked up in the storage houses and being referred to by the man in charge of the house.

Assistance has been given by this office in the erection of 5 new storage houses in Princess Anne county, and 1 in Dinwiddie county. In addition to the aid given in the erection of the new houses, help has been furnished

COOPERATIVE EXTENSION WORK
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STATE OF VIRGINIA

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

EXTENSION SERVICE

HARVESTING, HANDLING, STORING AND CURING SWEET POTATOES

TIME OF HARVEST

Harvest sweet potatoes when mature but before a killing frost.

A test of maturity may be made by breaking a potato in two pieces. If mature, there will be little sap, and the broken surface will turn white and appear dry after being exposed to sun a few minutes. If immature, the sap will be more plentiful, and the surface of the potato will appear dark or black spotted.

HARVESTING AND HANDLING IN THE FIELD

Clip vines, using a method that will not bruise potatoes.

Harvest potatoes with a large turn plow or standard potato plow. Plow deep in order to avoid cutting potatoes, as cut potatoes cannot be marketed. Handle potatoes for market with greatest care. Probably more potatoes are lost by growers as result of careless handling than from all other causes.

Use heap rows, piling three rows of potatoes together.

Avoid pitching potatoes in piles.

Do not allow potatoes to remain in the field over night.

GRADING

Grading should be done in the field. Separate culls and injured potatoes from marketable potatoes. Frost-bitten potatoes will not cure properly and should be classed as culls.

Place potatoes in the containers that are to be used in the storage house.

Do not heap potatoes above top of crate. Do not nail lids on crates.

Haul potatoes from field to storage house with care in order to prevent bruising.

GRADES

The following grades should be followed in grading potatoes. These grades are the official grades for Virginia as well as for the United States at large.

Grade No. 1. Diameter, smallest $1\frac{1}{4}$ inches, largest $3\frac{1}{2}$ inches; length, shortest 3 inches, longest 10 inches. Note the following exception: the length may be less than 3 inches if the diameter is $2\frac{1}{4}$ inches or more.

Grade No. 2. Diameter, smallest $1\frac{1}{2}$ inches, largest $3\frac{1}{2}$ inches. No length specified.

Note—All potatoes of the above size not meeting the length requirements of Grade No. 1 will be placed in No. 2.

All grades should consist of sound sweet potatoes of similar varietal characteristics which are practically free from dirt and other foreign matter, pest injury, decay, bruises, cuts, scars, cracks and damage caused by heat, disease, insects or mechanical or other means.

STORING

Store potatoes in crates in the storage house, stacking them at least four inches off the floor and six inches from the wall, so as to allow plenty of ventilation. Allow at least two inches of ventilating space between each row of crates.

It is advisable to use 1 by 1 inch strips between the layers of crates. Do not nail strips to crates.

Do not stack potatoes to the ceiling, but allow plenty of room above potatoes for a good circulation of air.

Store potatoes within three days in one compartment.

Store No. 1 and No. 2 potatoes in separate sections of the house.

CURING

The factors that make for success in storing of sweet potatoes are: first, control of moisture; second, uniform temperature.

When the house is filled, raise temperature to around 80 or 85 degrees. At the same time give the house all possible ventilation.

Maintain a temperature of from 80 to 85 degrees during the curing period, which is usually from ten to fourteen days, depending upon the weather and condition of potatoes.

Give the house all possible ventilation during the curing period, if weather will permit.

Keep a close watch upon the house during the curing period and maintain as uniform a temperature as possible.

Close the floor ventilators and doors at night if there is likelihood of frost.

Close the top ventilators in cold or rainy weather.

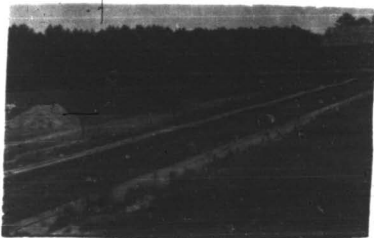
When the curing period is over (this can be told by an examination of the potatoes, if they have a velvety feeling or the eyes or buds on the potatoes show signs of sprouting throughout the house, then they have been properly cured), reduce temperature to between 50 and 55 degrees as soon as possible. Do not allow the temperature at any time to go below 45 degrees.

Examine the house each day. When dampness is found, open the top ventilators and use a little fire if necessary. Watch the house to keep down all moisture, using best of judgment at all times in ventilating and heating.

Every house should be provided with a number of good, standard thermometers. One should be placed near the floor and one near the top of the house so that the check may be kept on heat and ventilation.

Place one man in charge of storage house.

in the remodeling of two old buildings into storage houses. One of these is located in Amelia county and the other in Princess Anne. Sixty-two plans of storage houses have been sent out from this office in all.



Sweet Potato Seed Bed.

A word should be included in the report on the sweet potato work relative to the exhibit at the State Fair. The Vegetable Extension featured the sweet potato at the Fair. A picture and a discussion of the exhibit are given in this report under the heading of Fairs.

TOMATO IMPROVEMENT PROJECT

As will be noted in the annual plan of work the tomato improvement project deals with two distinct types of tomato production - (1) Production of Tomatoes for the Canning Crop and (2) Production of Early Tomatoes for Green House. These will be treated separately in some of their phases but jointly where conditions affecting them are common to both.

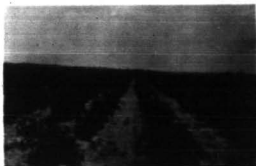
The tomato work has been carried on during the year in a total of 12 counties. In some of the counties the work has been carried on in only a small way while in others it has been carried on intensively. Meetings were held in Northumberland, Westmoreland and Stetourt Counties, at which the problems peculiar to the growers of the respective counties were discussed and the work planned for the year. Among the things emphasized at these meetings were

- Good seed
- Better varieties
- Cultural practices
- Fertilisation
- Soil improvement crops and methods of control of diseases

Due to abnormal seasonal conditions this year there was a large amount of blossom and rot and cracking. This is caused by high temperatures and low humidity over a considerable period. The tomato ceases to grow, the skin toughens and then when water is again pumped into the plant through the roots, the skin is unable to expand quickly enough and parts in unsightly cracks. Many of the growers, however, have blamed the condition upon the seed. The specialists have taken every opportunity to correct this impression and to explain to the growers the true causes of this cracking and the reasons for its prevalence this year.

Numerous demonstrations have been given throughout the State in the recognition and control of the various diseases affecting the tomato crop. Most of these have had to do with wilt, both Fusarium and Bacterial, Leaf spot, blight and other diseases of lesser importance. In Nelson County a severe outbreak of bacterial wilt was found in a section of the County where tomatoes were being grown for the first time as a canning crop.

Soil Improvement Done for the Tomato. The rotations for the tomato crop outlined by H. H. Zimmerman, of the Norfolk Truck Experiment Station, have been recommended to the growers in Northern Neck. This year, upon the advice of the specialists, many of the farmers turned under a good soil improvement crop for the first time. Unfortunately the season was so dry that the improvement crop failed to rot in the ground and little or no benefit resulted to the tomato crop during the present season.



Tomato Field

The grower readily appreciated this fact when it was explained to him. In this and in all cases the specialists have attempted to show the grower the reasons for lack of increased yields this year from turning under an improvement crop.

In addition they have pointed out that soil improvement is not a matter of one year's crop but that it is a goal to be attained through a plan extending over a period of years.

One out-of-state meeting was attended, relative to the tomato industry. This meeting was held at Baltimore, Maryland, under the auspices of the

The writer recalls the case of one grower who turned under a good clover sod. Part of his tomato crop was planted on this land and the rest on land which had been in corn the previous year. The land that had been in corn yielded more tomatoes than the land that had been in clover. The grower was at a loss to understand this. However, questioning brought out the fact that the corn land had been in clover the year before. This had been plowed under to plant corn and had, of course, been converted into good humus by the time the tomatoes were planted, while the clover plowed under the year the crop was planted rotted to very little extent.

University of Maryland Extension Service.

The conference was presided over by Dr. T. B. Symms, Director of the Maryland Extension Service, and was attended by G. G. Woodbury, of the National Canners Association, Plant Pathologists and Genetode Experts, from the University of Maryland, and by the county agents of the various counties in Maryland where tomatoes are an economic crop.

Each county agent gave a report of the tomato work in his county and its problems during the past year. The balance of the conference was given over to a discussion of these problems and to outlining the policy to be carried out next year. The writer believes that he gained much from attending this conference that can be used to advantage in his work on the tomato project in Virginia during the coming year. Maryland has much in common with Virginia in the tomato industry and what is of value to them holds much of value for us.

Early Tomato Production: The Production of Early Tomatoes for Green Crops is located entirely in Northumberland County and practically all the growers belong to the Coan River Tomato Association. As in past years the specialists have worked in close cooperation with the Coan River Association, especially along the lines of production. The main problems of the growers are along the lines of securing good seed, seed-bed and field diseases, soil improvement and marketing.

Securing Good Seed: In December of last year Mr. Smith addressed a meeting of the Coan River Tomato Association and advised the growers to order their seed through the Association. In the past the individual growers had ordered their own seed, with the result that there were several varieties being grown in the county, many of them unfitted for green crops. In addition to the central purchasing of seed, Mr. Smith suggested that all growers limit themselves to two varieties - Bonny Best for the bulk of the planting and Globe for a lesser planting. The members agreed to do this and 125 pounds of seed were purchased through the Association. Bonny Best has secured the favor of the growers, while some few favor the Globe. In the majority of instances, however, during the past season, Globe cracked more severely than did Bonny Best and for this reason is not held as highly as Bonny Best. In addition, Globe is a pink skinned tomato, which takes considerable time to color up. After the Association stops shipping fruit the growers usually sell the remainder of the crop to canneries. This

year many of the canneries refused to take Globe because of its color. Part of the fault was probably the growers in that they picked the fruit too early for delivery to the cannery. Nevertheless it reacted to the disfavor of Globe and to the favor of Sonny Best. However, some experience in other places has been that Sonny Best does better one year and Globe the next. The writer believes that Globe should be given further trial and a small amount of the seed will be planted during the coming year.



Plant Bed for Early Tomatoes

Seed-bed and Field Experiment: Two hotbeds and seven cold frames were treated with formaldehyde to prevent damping off fungus. Although there was practically no damping off in the beds treated, no outstanding results could be pointed out as very little damping off occurred in any of the beds, whether treated or untreated, due to the dry season.

Twenty-four beds were inspected and records kept. Very little disease

was found in any of the beds, with the exception of a little jumping off. Fields were inspected during the growing season whenever the specialists visited the county.

Soil Improvement: Soil improvement still remains a big problem for the county. Progress is being made, however, and the growers are beginning to realize the importance of this phase of the tomato industry. Since this is a problem common to both green waxes and tomatoes for the cannery the main discussion of this question is at the beginning of the tomato project report.

Marketing: This problem has been left entirely, during the past year, to the Agricultural Economics Department. It is not unfair, however, to state that the Association received a premium on its shipments throughout the entire season over and above the price offered for fruit from other sections.

Production of Tomatoes for the Cannery: The quality of the tomato crop for the cannery was exceptionally low this year. The majority of the canners in Virginia put up but one pack known as the standard pack and made no attempt to grade their output. During the past season some of the canners sold their goods unlabeled because the quality of the pack was so poor that they did not want it to go out under their name. Improving the quality of the crop, therefore, is the big problem throughout the entire State.

The work of the Vegetable Extension on the tomato canning crop has centered largely in Westmoreland County, where the work has been conducted along the lines outlined last year. The big problem in this county, as well as throughout the whole State, is the improvement of quality and practically all the work done has been carried out with that purpose in view. The specialists have thought that the best method to attack this problem at the present time is to stress the following:

- Good seed
- Community plant beds
- Cultural practices
- Soil improvement crops
- Fertilization
- Disease control
- Grading

For that reason the demonstrations and work carried on in Westmoreland County have been along the lines listed above.

Community Plant Beds: Five community plant beds have been conducted in Westmoreland County during the past year. These were located as follows:

Leedstown
Oak Grove
Montross
Hague
Acorn

The beds averaged 1/4 acre in size, there being one bed of 1/8 acre size, one 3/16 acre bed, two 1/4 acre beds and one 3/8 acre bed. The growers of these beds were helped in their management from the time the plant beds were selected until the plants were set in the field. Demonstrations were given in the selection of a site for the bed, land preparation, fertilization, sowing the seed, weeding, cultivation, thinning, spraying or dusting, pulling the plants for field setting, etc. From these five beds 200,000 plants were sold and an additional 144,000 plants were used by the growers of the beds themselves.

The season was very unfavorable for field setting and growers obtained plants from so many different sources for replanting that very little accurate check could be kept on yields. The time of setting also varied a great deal and larger yields were secured in all communities from the earlier plantings than were obtained from later settings. However, field inspection has led the writer to believe that these plants produced, in all cases, as well as plants from other sources and that quality on the whole was better in many instances.



Community Tomato Plant Bed - Westmoreland County

The Montross Packing Company reported that the fruit coming into their cannery from growers who purchased plants from the plant bed at Montross was the best in quality of any received, being equalled only by the fruit of one other grower who had secured his plants elsewhere. This speaks well for the plant bed work. Everett Nysson, at Leadston, sold plants to his father even though his father had a plant bed of his own. The superior quality of the plants in the bed was his father's reason for using them. In a report on the plant bed work as a whole County Agent C. C. Chase states, "I feel that it may be said that had not this piece of work been done that the county would have been short four-fifths of the plants produced. This would have probably been a good thing for the canners but would have worked hardships on individual growers."

In the plant bed work for 1926 eight sites have been selected in the county by the writer and the county agent. The seed bed work of 1925 has aroused the interest of the growers and they are willing to cooperate heartily. Instruction has been given to the men in each case as the site was selected on the points to be considered in choosing that particular location for the plant bed, plant bed management, etc.

Seed Saving Demonstrations: Many of the tomatoes grown in Westmoreland County are of extremely low quality and of a very poor shape for canning stock. A tomato for canning should be round and smooth and should ripen uniformly. Instead of that, much of the fruit grown in this county ripens unevenly, is poorly shaped and wrinkled at the stem end. Much of this is caused by poor seed. For that reason seed saving has been stressed in this county during the past season. The specialists, together with the County Agent, gave several demonstrations on saving tomato seed. A goodly amount of seed has been saved and the seed selection should result in an increased quality of the tomato crop next year for those growers who saved their seed as instructed. Since much of the seed so saved will be used in community plant beds the distribution will be far wider than if used by individual growers.

Soil Improvement Work: Steady but slow progress is being made with this phase of the tomato production in Westmoreland County. It is discussed at greater length at the beginning of the tomato report.

Disease Control: Demonstrations have been given in the recognition and control of diseases. Disease control has been restricted largely to work with the community plant beds. These beds were dusted from four to five times under the supervision of the specialists or the county agent and at the time the plants were ready for the field practically no disease could be found in any of the beds.

Demonstration at Canning Factory: The grading demonstration mentioned in the annual plan of work was carried out at one canning plant in Westmoreland County. The quality of fruit was exceptionally low, the no worse at this cannery than at others throughout the county. It had been hoped to pack the fruit into Fancy, Super Standard and Standard grades. However, due to the poor quality of the fruit, its greenness, etc., none but standards could be packed. A description of the demonstration follows:



Tomatoes Stacked at the Canning Factory.

The purpose of the demonstration was to attempt to evolve some way by which the canner could buy his fruit on quality rather than to pay a standard price to all growers. If such a method could be evolved the better class of growers would thereby be paid a premium on their crop and the poorer class of growers would have to increase the quality of their crop. Of course, any system of grading at the cannery must be simple and inexpensive or the canner cannot be induced to adopt it. Therefore, it was thought that a system of grading could be worked out whereby two baskets of fruit taken at random from a load would serve as a basis for fixing the price for the entire load.

The main purpose of the demonstration this year was to prove to the grower that off-grade tomatoes caused him loss and that he could afford to pay a premium for high grade fruit. The demonstration was carried out very much in line with that conducted in New York in 1924 and published in Cornell Extension Bulletin #94.

The tomatoes were graded at the cannery and the percentage off-grade was computed. The standards set up for the demonstration were the same as those used in the New York work and are as follows:

"A tomato was considered off-grade if more than 10% of its weight would be lost due to its defects in the ordinary process of peeling and coring. This process eliminated green tomatoes, totally rotten tomatoes, tomatoes with large green stem ends and the like."

In all a little over a ton of fruit was graded and showed the following distribution:

<u>Number of half-bushel baskets</u>	<u>Percent off-grade (percentage)</u>
5	0 - 24
7	25 - 34
11	35 - 44
17	45 - 54
5	55 - 64
6	65 - 74
4	75 - 84
2	85 -

Each lot of tomatoes was then run separately and data taken on the weight of the sample, the weight of the waste, and the number of cans of tomatoes secured from each grade.

This data is shown concisely in the table on the following page. A study of this table brings out some interesting facts, a few of which are listed.

1. That even with tomatoes with 0% off-grade, approximately 13% is lost in the ordinary process of peeling and coring.
2. As would be expected the weight of waste and the % waste increased as the % off-grade increased.

The Percentages of Off-Grade Tomatoes, and Their Effects on Percentage of Cans and on Yields of Canned Tomatoes in Waterland County, Virginia in 1926.

Amount of:	%	Net	Net	Net	Waste	Cans of:	Tomatoes	Waste	Cans
tomatoes	amount	weight	weight	(%)	of	necessary	per	of	
off-grade	off	of	off	of	Tomatoes	for one	bushel	per	
(%)	grade	complex	grade	waste		(\$2 can of)	(lbs.)	bushel	
	(%)	(lbs.)	(lbs.)	(lbs.)		tomatoes	is		
						(lbs.)			
0	0	28.8	0	2.7	12.7	22.8	1.28	7.62	146.87
0-24	25.0	1417.4	108.2	98.2	22.81	183.0	2.28	12.68	126.51
25-50	45.0	1775.8	144.0	266.0	27.2	430.0	2.38	16.22	128.21
50-	64.1	1876.2	428.8	202.7	29.2	278.0	2.46	17.24	124.39

Note. . . . \$2 cans were used entirely.

3. The number of cans of tomatoes increased per unit quantity of fruit as the % off-grade decreases.
4. The number of pounds of tomatoes necessary for one can of tomatoes increases as the off-grade increases.
5. The pounds waste per bushel increases as the % off-grade increases.

To my mind, however, the most striking point brought out by this table is the small difference in the number of pounds of tomatoes necessary for one can of tomatoes and the small difference between the number of cans per bushel regardless of the % of fruit off-grade. The factors throw considerable light on this matter. First, the farmer who owned the cannery where the demonstration was carried on had working for him a force of pickers who pared the tomato exceptionally close. Much of the unripened portion of the tomato around the stem and went into the can which in many of the canneries would have gone out as waste. Secondly, only standards were packed, because of the poor quality of the fruit. An examination of the results at Cornell show that the difference is not so much in the number of pounds of tomatoes necessary to make a can of tomatoes as it is in difference in the distribution of the cans in the various grades, namely; Fancy, Super Standards and Standards. In the Cornell Experiment the greater the % off-grade, the fewer the cans of Fancy and vice versa. However, both in the Cornell Experiment and here there was little difference in the number of pounds necessary to make one can of tomatoes regardless of the % off-grade. This holds true until a sample is taken with 0% off-grade. One such sample was taken in the present demonstration. The table shows that a can of tomatoes was turned out for every 1.28 pounds of raw fruit where there was 0% fruit off-grade while in the next class, that ranging from 0 - 25% off-grade, it required 2.28 pounds

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, COOPERATION

EXTENSION SERVICE

February 2, 1925.

The Mexican Bean Beetle

Prepared by W. J. Schoene and A. G. Smith, Jr.

Severe injury from the Mexican Bean Beetle is expected in all the counties of Southwest Virginia in 1925. In the summer of 1924 this insect was found as far east as Giles, Bland, Wythe and Carroll counties. The Mexican Bean Beetle is a new-comer in Virginia. It appeared in Alabama in 1920, reached Southwest Virginia in the fall of 1922, and is rapidly spreading eastward. The beetle is a yellowish or copper colored insect with sixteen black spots. It is about the size of a small pea. It feeds on practically all varieties of garden and field beans.

Under average conditions this pest may be successfully controlled. During the season of 1924, fields in Wise and Lee counties, ranging from one-half to two acres in size, were dusted, where great numbers of beetles had appeared the preceding season. Where four applications of dust were made, a normal crop of beans was produced. In the same sections where no poisons were used the beans in home gardens and fields were completely destroyed. The treatment is simple and inexpensive and may be used by the average farmer.

Injury by the bean beetles may be prevented by dusting the undersides of the foliage of the beans with calcium arsenate and lime in the following proportion:

1 pound calcium arsenate
9 pounds hydrated lime

The application should be made when the beetles first appear and repeated at intervals of a week or ten days depending on the weather. Failure to apply the dust before the young insects hatch and begin to spread will usually result in the loss of the crop.

The calcium arsenate used for the control of this beetle may be procured in 100 pound drums at 12 to 15 cents per pound through wholesale dealers at several points in the state. The retail price is somewhat higher. An effort has been made to have a number of the retail stores in Southwest Virginia carry small quantities of the poison so that it may be purchased for use in home gardens.

For best results the dust should be applied with a good bellows or blower dusting machine. The very small hand dusters are not satisfactory for large plantings but may be used on small gardens.

For further information see your county agent or write the Extension Division, Blacksburg, Virginia.

of raw fruit to make one can of tomatoes. A bushel of the tomatoes in the 0% off-grade class would turn out over 40 cans of tomatoes at the factory while a bushel of that ranging from 0 - 35% would turn out but 25.

The tomatoes used in the 0% off-grade class were picked from vines which had been grown from seed selected by A. G. Smith, Jr., during the previous year. This throws some interesting light upon possible improvement through seed saving.

It would appear to the writer that for the Virginia tomato grower the problem is to increase the quality of his crop to a point where the canner will be forced economically to separate his pack into various quality grades.

Miscellaneous Work.

Mexican Bean Beetle Control. The Mexican Bean Beetle control work has been carried out this year on the plan outlined in the last report. Ten demonstrations were given by the specialists in Giles, Hland, Montgomery, and Russell Counties. Due to the limited amount of time that the specialists could devote to this project much of the demonstration work was left in charge of the county agents. These agents report satisfactory control wherever the control measures were followed. In addition to work in the above counties, demonstrations were carried on in Wise County through Rev. James A. Smith at Big Stone Gap. A duster was left in Mr. Smith's care for this purpose and in a report on this work Mr. Smith states that excellent control was secured in all cases. The duster used by Mr. Smith was a #230 Robbins Duster and was furnished to the department for demonstrational purposes by The Robbins Manufacturing Company, N. St. Paul, Minnesota. A second duster was furnished by Sam Glawitch & Co., Springfield, Tenn., for the same purpose. This duster was used throughout the season in Giles County and gave excellent results.

In February, a circular entitled "The Mexican Bean Beetle" was prepared by W. J. Schone and A. G. Smith, Jr. Three thousand copies of this circular were printed and distributed throughout the counties infested with the beetles. In addition to this publicity short control articles were published at various

times in one of the county newspapers.

This work will be continued during the coming year and every aid possible will be given from this office in checking the steady march of this pest eastward.

Home Vegetable Gardens. Due to a lack of time on their part the specialists have not devoted the time to this project during the past year that it is worthy of receiving. Some personal visits were made in this projects but most of the work was carried out as in the past through letters, circulars and bulletins. Plans were made and distributed for 24 home gardens. Special emphasis has been laid this year upon the Fall Vegetable Garden.. The early gardens suffered severely from the long dry season and this made the fall gardens all the more important. Numerous circulars and bulletins concerning this subject were sent out, giving varieties, dates of planting, fertilization, cultural practices, etc., of vegetables suitable for the fall garden.

Work with Cantaloupe Growers. Two trips were made to Prince Edward County at the request of the County Agent. In May the specialist visited several of the cantaloupe growers of that county and gave recommendations for cultural practices. An American Beauty Bellows Duster placed with this department by the Tobacco By-Products Company, Louisville, Ky., was placed in the care of the county agent for demonstrations in dusting cantaloupes. The agent reports good control in all demonstrations.

During the summer the specialists answered a special call from this county to inspect the fields for disease. Approximately 25 acres of cantaloupes were inspected and very little disease was found. In many instances the fields were suffering from the long dry spell and some of the growers had mistaken this for wilt. In one four acre field a severe condition of Chlorosis existed due probably to a lack of lime. This condition could not be profitably overcome this season but recommendations were made for the coming year.

Special Work. Several requests for special work have reached this office during the past year and wherever possible these requests have been answered. The calls have ranged from individuals who wanted to enter the trucking game to institutions who needed help in the planning and management of their production of vegetables for the consumption of the institution.

Fairs. Seven fairs were attended during the past year and products were judged at six of them. The fairs attended are as follows:



Vegetable Extension Exhibit - State Fair, Richmond, Virginia. - 1925.

Accomac County Fair,
Tri-County Fair.
Norfolk County Fair.
Virginia State Fair.
Westmoreland County Fair.
Giles County Fair.
Frederick County Fair - (not judged)

Hall's, Va.
Petersburg, Va.
Norfolk, Va.
Richmond, Va.
Montross, Va.
Fountainburg, Va.
Fredericksburg, Va.

In addition the following exhibits were judged:

Dahlia Show
Garden Club Exhibit - State Fair,
Negro Irish and Sweet Potato Exhibit - State Fair,
Flower Exhibit - Student Horticultural Show -

Farmville, Va.
Richmond, Va.
Richmond, Va.
Hicksburg, Va.

At the State Fair this year the Vegetable Extension featured the sweet potato in their exhibit. Plans were drawn by the Vegetable Specialists and these were submitted together with a color scheme and brief report on the nature of the exhibit to a committee elected at a meeting of the Extension Specialists. Upon approval this committee referred the plan to a final committee for approval composed of the Director of Extension Service, The President of the College, and the Dean of Agriculture. This procedure was followed in order to insure careful preparation and planning of the exhibit.

The purpose of the exhibit was twofold: first, to show the most important varieties of sweet potatoes grown in this state and secondly, to feature the four types of containers in which the sweet potato is marketed.

Four varieties of potatoes were used in the exhibit, namely; Honey Hill, Big Stem Jersey, Little Stem Jersey, and Porto Rico. These were secured from Accomac, Brunswick, and Princess Anne Counties through the courtesy of the growers. They were arranged in the standard containers in which the sweet potato is marketed in Virginia.

1. The Barrel.
2. The wye Hooper.
3. Bushel Hooper.
4. Five Peak Crate.

Hoops were used to represent the barrels but in all other cases the actual containers were used. Appropriate placards and legends were used to

emphasize the purpose of the exhibit and rhododendrons, mountain laurel, hemlock, and arbor vitae were used to soften the lines of the exhibit. Numerous favorable comments on the exhibit have been noted by the writer in newspapers, and farm journals.

The Vegetable Extension Service staged a similar exhibit at the Keller Fair although on a smaller scale.

Publicity. Timely articles have been prepared for the Extension News which is published monthly. Several articles have been published in the Southern Planter and the Progressive Farmer. Newspaper items have been prepared from time to time and published in county newspapers. In addition to the above two papers were prepared by A. G. Smith, Jr., and presented at the annual meeting of the American Association for Horticultural Science held at Washington, D.C. These papers dealt with the methods followed in conduction of the tomato demonstration work in Northern Neck and with the potato seed project.

STATISTICAL DATA.

The following statistics are presented to embody the summaries of the questions on the monthly report together with other data which bears directly upon specific problems. The data is given for the personnel of the Vegetable Extension collectively rather than individually. In most cases the figures are based upon actual count while in a few cases they are approximated.

Number days in field -	3367
Number days in office -	251
Days annual leave -	42
Number of different counties visited -	58
Number of visits to counties with agents -	51
Number of visits to counties without agents -	32
Number of visits unassisted in counties where agents are employed -	51
Meetings attended -	42
Attendance -	2670
Letters written -	1645

Different circular letters written -	5
Number of circular letters sent out -	229
Clubs visited - Boys' or Girls' -	2
Demonstrations given -	349
Miles traveled by auto -	9193
Miles traveled by rail -	25604
Miles traveled - other -	1233
Total number of farmers met or visited -	1216
Farmers institutes and tours attended -	5
Fairs attended -	7
Fairs judged -	6
Fair exhibits prepared -	2
Newspaper articles prepared -	19

Sweet Potato Project

Sweet potato storage house inspections -	42
New sweet potato storage houses constructed -	5
Buildings remodeled for sweet potato storage houses &	2
Number of plans furnished for storage houses -	62
Bushels of sweet potatoes in storage houses inspected -	47,283
Number of bushels seed sweet potatoes treated -	155
Number of seed-bed inspections -	67
Number of bin inspections -	20
Number of field inspections -	43
Number of farmers visited in sweet potato project -	294
Number of different counties visited -	15

Potato Seed Project

Storage house inspections -	9
Seed treatment demonstrations -	14
Bushels of seed treated -	293
Number of field demonstrations made -	41

Number of farmers visited -	104
Number of counties visited -	12
Number of meetings attended -	3
Attendance at meetings -	256
Number of potato tours -	1
Number of demonstration plots -	9
Number of records kept of demonstration plots -	8
Number of additional farms on which Virginia Mountain Seed was planted and records taken -	62
Number of bushels seed used on these farms -	1,000

Swiss Improvement

Counties in which work was done -	12
Number of community plant beds -	5
Plant bed sites selected for 1925 -	8
Total number of plants produced in community beds -	346,000
Number of farmers visited -	124
Swiss canneries visited -	14
Number of meetings attended -	11
Attendance at meetings -	510

Mexican Bean Beetle Control

Counties in which work was done -	4
Number of demonstrations -	10
Number of different circulars prepared -	1
Number of newspaper articles prepared -	2
Dusting machines furnished for demonstration -	2

Respectfully submitted,
Blacksburg, Virginia,
December 1, 1925.

L. B. Dietrich

L. B. Dietrich,
In Charge of Vegetable Extension

LSB/ek