

MISSISSIPPI AGRICULTURAL EXPERIMENT STATION

A. & M. College, Mississippi

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CERTIFIED IRISH POTATO SEED**Report of 1928 Test**

—BY—

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During the past four years, tests with Irish potato seed have been conducted at the Mississippi Agricultural Experiment Stations in an effort to determine the value of certified over uncertified seed and to find the best source of Irish potato seed for Mississippi conditions. The results from the tests conducted during 1925, 1926, and 1927 have been published in circular form and may be obtained by writing the Director of the Agricultural Experiment Stations, A. & M. College, Mississippi. Largely, due to the results obtained from these experiments the use of certified seed by Mississippi growers has been increased from a few bushels in 1925 to approximately 20,000 bushels in 1928.

What are certified seed?

By the term "certified seed" we refer only to potato seed that have been inspected carefully in field and in storage and certified to be relatively true to variety and free from seed-borne diseases by unbiased inspectors selected or approved by the agricultural college or department of agriculture of the state in which the potatoes were grown. The term "state certified seed" is sometimes used to distinguish certified from the so-called "privately certified seed". The use of several terms to distinguish different types of certified seed is confusing which makes it desirable to restrict the term "certified seed" to those potatoes that have been certified by the proper state officials.

There are several firms which have sold in Mississippi in the past privately certified seed. Some of these firms, no doubt, are making an honest effort to produce a high grade of seed potatoes. In the future, the writers believe that such firms should establish a brand of seed potatoes and advertise and sell their brand rather than certified seed. For obvious reasons, the inspection service employed by such firms is not altogether unbiased and there is always the likelihood that unscrupulous persons may misrepresent potato seed which may or may not have been inspected by men who are familiar with the various diseases. In fact, there have been some local dealers in this as well as in other states who have sold uncertified, field-run stock as certified seed.

State Plant Board Rule No. 60.

The practice of unscrupulous dealers "certifying" seed made it necessary for the Mississippi State Plant Board to pass a ruling prohibiting the use of the term "certified" except for seed that have been certified by state officials. The rule reads as follows:

"In order to discourage the introduction into and the dissemination with Mississippi of mosaic, scab, leaf-roll, spindle-tuber, late

blight, wilt, wart, and other diseases of Irish potatoes, the use of the terms "certified", "inspected", "registered", or any other terms conveying a meaning substantially equivalent to these terms, either orally or in writing, or in advertising in reference to such potatoes, or on the labels or containers thereof, is hereby prohibited, except when such potatoes shall have been inspected and certified by the legally constituted inspection officials of the state in which they were grown, or by such other agencies as may be approved by the State Plant Board of Mississippi."

Why certified seed are better.

The Irish potato is subject to attack from approximately 50 different diseases, many of which are seed-borne. Such seed-borne diseases as scab, black-scurf, and black-leg can be controlled by treating the seed for 30 minutes in a 1-1000 solution of bichloride of mercury. There is also a group of degeneration diseases affecting the Irish potato which includes mosaic, leaf-roll, and spindle-tuber. These diseases have been shown to reduce the yield from 30 to 80 per cent. Since these diseases are carried in the inside of the tubers and cannot be controlled by surface treatment, it is necessary that disease-free seed be used for their control. The degeneration diseases usually can be recognized only by the appearance of the tops of the plants and, therefore, it is necessary that the potatoes be inspected while they are growing in the field to determine whether or not the potatoes from the plants in a particular field are suitable for seed purposes. Certified seed are relatively free of these diseases whereas uncertified seed usually have from 35 to 90 per cent of the tubers infected. For a detailed discussion of the degeneration diseases, the reader should refer to Mississippi Agr. Exp. Sta. Bul. 258.

How to know certified seed.

Growers of certified seed are furnished certificate tags to attach to the containers of their seed in such a way as to provide a seal for the same. Each tag should show clearly that it was issued by or under the supervision of the agricultural college or department of agriculture of the state in which the potatoes were grown and should give the name of the grower or his certificate number. The tag giving the grower's name should be kept for future reference since it may be of considerable value in making future purchases of seed potatoes. When in doubt about the validity of certificate tags send them to the State Plant Board, A. & M. College, Mississippi, for verification.

Mississippi certificate tags not required.

Certificate tags are not issued by the Mississippi State Plant Board for Irish potato seed. The only tag necessary for certified Irish potato seed in Mississippi is the one issued by the officials of the state in which the potatoes were grown.

How to purchase certified seed.

Carlots of certified seed should be purchased direct from the grower through his potato grower's association. This will save jobbers' commissions and almost eliminate any danger of the tags being changed from the original to inferior grades of seed. Inquiries about prices, etc. for certified seed should be addressed to the following associations which are in charge of the certification work or which have charge of the sale of certified seed in their respective states.

TRIUMPHS

Nebraska

Nebr. Certified Potato Growers Co-op.
Alliance, Nebraska.

Montana

Montana Certified Potato Marketing Ass'n.
Helena, Montana.

Wyoming

Wyoming Certified Potato Growers Ass'n.,
Torrington, Wyoming.
Wyoming Certified Potato Growers Ass'n.,
Egbert, Wyoming.

COBBLERS

Maine

Division of Plant Industry,
Department of Agriculture,
Augusta, Maine.

South Dakota

South Dakota Potato Grower Ass'n.,
Watertown, South Dakota.

Vermont

Vermont Seed Potato Service,
Department of Agriculture,
Montpelier, Vermont.

TRIUMPHS AND COBBLERS

Minnesota

Minnesota Seed Potato Inspection and Certification,
Department of Agriculture,
St. Paul, Minnesota.

Wisconsin

Department of Horticulture,
University of Wisconsin.
Madison, Wisconsin.

North Dakota

North Dakota Pure Seed Commissioner,
Fargo, North Dakota.

Potato growers using small quantities of seed should purchase them cooperatively through their farm bureau or from their local dealer. The State Plant Board endeavors to keep a complete list of all persons selling certified seed in this State, and a copy of this list will be sent to those interested upon request.

REPORT OF 1928 TESTS

The certified Irish potato seed tests were conducted along the same general plan as in previous years at the Main Experiment Station, A. & M. College; at the South Mississippi Branch Experiment Station, Poplarville; and at the Raymond Branch Experiment Station, Raymond; in cooperation with the Mississippi State Plant Board. That is, representative samples of seed of the Triumph and Cobbler varieties were furnished each of these stations by various growers in the several states producing commercial quantities of seed. An attempt was made to have two representative samples of seed in each of the tests from each of the states furnishing samples of seed.

All samples of seed were treated for 30 minutes in a 1-1000 solution of bichloride of mercury, dried, and cut into seed pieces as nearly equal in size as practical. The plats at each of the Stations on which the potatoes were planted had received about 1200 pounds of an 8-4-4 fertilizer per acre about two or three weeks before planting. The soil type was a very light sandy loam at Poplarville, a medium heavy sandy loam at Raymond, and a heavy sandy loam at the Main Station. The potatoes were planted one foot apart in rows 3 feet wide and 25 feet long. The number of replications for each test is given in foot-notes with each table. The different replications were arranged in such a way as to overcome any soil variation that might have occurred. The potatoes were planted February 11,

March 2, and March 14 at Poplarville, A. & M. College, and Raymond, respectively. Readings on the prevalence of the various degeneration diseases were made in April and in the early part of May. The results from these tests are summarized in tables 1 to 6.

TABLE 1

Summarized Results from the Main Station Test of Certified and Uncertified Irish Potato Seed of the Triumph Variety from Different Sources.*

Source of seed	Per cent germination	Per cent degeneration diseases		Bushels per acre	
		Mosaic	Spindle-tuber	Marketable	Culls
Nebraska, Berea, Ejner Christensen	82	2.4	9.8	201.4	20.5
Nebraska, Pete Peterson	66	5.1	3.6	194.7	23.1
Montana, Hardin, J. C. Walker & Son	78	3.8	3.9	193.9	18.9
Wyoming, Ft. Laramie, L. E. Johnston	76	1.3	1.3	192.1	26.1
Billsrud, Albert Miller Co., Chicago	64	4.7	1.6	191.6	14.9
North Dakota, Kenmare, Henry Rytter	79	7.6	2.5	190.9	21.2
UNCERTIFIED, Tupelo, Miss.	82	9.8	8.5	190.2	12.3
South Dakota, Garden City, E. A. Fletcher	73	9.6	2.7	183.0	19.4
Nebraska, Hemingford, John Hennings	70	1.4	4.3	174.4	21.0
Montana, Coburg, J. C. Cronk	76	11.8	1.3	170.0	23.9
Wisconsin, Pembine, Dixon Brothers	75	9.3	0	163.6	13.9
Wisconsin, Kent, J. W. Smith	61	8.2	1.6	151.1	18.2
Wisconsin, Spooner, Agri. Exp. Sta.	82	3.7	trace	149.8	15.2
Minnesota, Warroad, Kennetz Brothers	77	3.9	0	149.2	15.2
North Dakota, Crosby, R. H. Points	74	27.0	4.1	147.6	19.4
UNCERTIFIED, Corinth, Miss.	62	42.0	4.8	145.5	17.0
UNCERTIFIED, E. L. Woods					
Byhalia, Miss.	69	27.5	0**	143.0	11.3
UNCERTIFIED, R. F. Provine, Big Creek, Miss.	86	50.0	2.2	126.6	10.2
UNCERTIFIED, Meridian, Miss.	78	80.8	3.9	94.7	19.0

* Average of 4 plats.

** This sample had 40.6 per cent of the plants infected with leaf-roll.

TABLE 2

Summarized Results from the Main Station Test of Certified and Uncertified Irish Potato Seed of the Cobbler Variety from Different Sources.*

Source of seed	Per cent germination	Per cent degeneration diseases		Bushels per acre	
		Mosaic	Spindle-tuber	Marketable	Culls
South Dakota, Hayti, Irwin Everson	92	5.2	3.5	219.8	12.8
Minnesota, East Grand Forks, Farmers Potato Company	87	4.2	1.3	212.8	10.3
South Dakota, Hayti, David Sour	84	2.9	1.0	198.8	12.2
North Dakota, Hillsboro, Bagstad & Swenson	97	6.9	6.2	198.7	14.7
Maine, Caribou, C. H. Mooers	94	4.2	2.5	190.5	10.5
Michigan, Manton, George Harrison	91	2.2	1.1	190.3	10.6
Vermont, E. Hardwick, H. A. Joslyn	90	2.7	0	188.5	13.7
UNCERTIFIED, Meridian, Miss.	92	9.4	2.2	177.7	18.5
UNCERTIFIED, Tupelo, Miss.	97	14.1	17.4	159.0	9.4

* Average of 4 plats.

TABLE 3

Summarized Results from the South Mississippi Station Test of Certified and Uncertified Irish Potato Seed of the Triumph Variety from Different Sources.*

Source of seed	germination Per cent	Per cent degeneration diseases		Bushels per acre	
		Mosaic	Spindle- tuber	Marketable	Culls
North Dakota, Grafton					
A. N. Midgarden	100	4.3	0	148.7	11.5
Montana, Redstone, George W. Points	98	1.0	0	137.0	20.2
Wyoming, Pine Bluff,					
C. B. Brown & Sons	94	4.4	1.1	135.4	27.2
Nebraska, Pete Peterson	92	5.8	3.5	127.8	15.8
North Dakota, Crosby, R. H. Points	98	27.8	1.0	127.0	16.3
Wyoming, Ft. Laramie, C. P. Jones	95	0	2.1	123.4	23.1
UNCERTIFIED, Gulfport, Miss.	92	4.5	0**	121.9	19.8
Billspud,					
Albert Miller Co., Chicago	96	2.1	trace	118.3	23.1
Nebraska, Hemmingford,					
J. C. Romer	98	9.7	2.2	112.9	18.6
Wisconsin, Phillips,					
Conradi Brothers	98	1.1	3.2	93.3	12.2
Nebraska, Aldine, Theo McKnight	95	5.5	0	93.0	19.7
UNCERTIFIED, Hattiesburg, Miss.	98	21.5	0	82.7	23.2
Montana, Glasgow, Lewis Belzer	99	16.8	2.1	79.2	20.5
UNCERTIFIED, E. L. Woods,					
Byhalia, Miss.	98	26.3	0***	67.2	10.2
Wisconsin, Coleman,					
Chas. Koslowsky	95	4.4	1.1	66.1	16.2
UNCERTIFIED, Poplarville, Miss.	95	88.8	1.1	60.9	8.2
UNCERTIFIED, New Orleans, La.	88	81.0	1.2	54.1	16.4
UNCERTIFIED, R. F. Provine,					
Big Creek, Miss.	99	55.7	2.2	53.5	19.7

* Average of 4 plats.

** 2.3 per cent leaf-roll.

*** 42.6 per cent leaf-roll.

TABLE 4

Summarized Results from the South Mississippi Station Test of Certified and Uncertified Irish Potato Seed of the Cobbler Variety from Different Sources.*

Source of seed	Per cent germination	Per cent degeneration diseases		Bushels per acre	
		Mosaic	Spindle- tuber	Marketable	Culls
South Dakota, Vienna,					
Leonard Parker	96	2.1	0	220.2	11.9
North Dakota, Hillsboro,					
Bagstad & Swenson	96	4.3	3.1	212.2	11.9
Maine, Presque Isle,					
Grover Johnson	94	0	3.2	208.4	11.1
Minnesota, Fisher, O. A. Float	100	0	3.0	200.8	13.4
South Dakota, Watertown,					
John Radtke	96	1.0	1.0	199.0	14.8
Maine, Caribou, Fred D. Ashby	97	0	4.1	191.0	11.8
Vermont, Greensboro,					
D. T. Mitchell	96	3.1	1.0	190.1	8.0
Vermont, Greensboro,					
Charles E. Lapierre	99	5.1	0**	189.0	9.7
Michigan, Manton,					
George Harrison	96	2.3	trace	176.1	9.0
UNCERTIFIED, New Orleans, La.	96	9.4	9.8	170.6	16.0

* Average of 4 plats.

** 1 per cent leaf-roll.

TABLE 5

Summarized Results from the Raymond Branch Experiment Station Test of Certified and Uncertified Irish Potato Seed of the Triumph Variety from Different Sources.*

Source of seed	Per cent germination	Per cent degeneration diseases	
		Mosaic	Spindle-tuber
Nebraska, Hemingford, W. W. Dyer	77	3.9	0.0
UNCERTIFIED, Jackson, Miss.	82	21.3	1.8
Wisconsin, Phillips, William Dama	84	7.1	0.0
Minnesota, Wilton, Joe Charon	85	12.9	1.2
UNCERTIFIED, Vicksburg, Miss.	83	53.0	0**
Montana, Malta, G. Dewit	88	4.0	2.3
North Dakota, Grafton, A. N. Midgarden	89	4.2	0.0
UNCERTIFIED, Natchez, Miss.	85	6.5	0.0
Wyoming, Torrington, William Schmidt	84	1.8	3.0
Nebraska, Alliance, Oscar Solberg	81	6.2	1.9
Illspud, Albert Miller Co., Chicago	85	3.1	1.2
Wisconsin, Spooner, John H. Putz	84	3.6	0.0
South Dakota, Garden City, E. A. Fletcher	80	10.0	1.9
UNCERTIFIED, R. F. Provine, Big Creek, Miss.	85	49.1	3.0
Montana, Havre, C. A. Slingstad	80	4.4	0.0
North Dakota, Leonard, J. B. Power	76	2.0	0.0
UNCERTIFIED, E. L. Woods, Byhalia, Miss.	74	23.1	0***
Wyoming, Ft. Laramie, William Green	82	3.0	1.8
North Dakota, Kenmare, J. C. Schultz	77	4.5	0.0
Minnesota, Princeton, O. J. Odegard	90	3.4	0.0
Nebraska, Pete Peterson	84	4.6	3.1

* Average of 8 plats; yield records lost.

** 1.2 per cent leaf roll.

*** 44.9 per cent leaf-roll.

TABLE 6

Summarized Results from the Raymond Branch Experiment Station Test of Certified and Uncertified Irish Potato Seed of the Cobbler Variety from Different Sources.*

Source of seed	Per cent germination	Per cent degeneration diseases		
		Mosaic	Spindle-tuber	Leaf-roll
Maine, Ft. Fairfield, Reed Brothers	97	1.0	1.2	1.6
UNCERTIFIED, Jackson, Miss.	91	2.7	.5	2.7
Vermont, Sheldon, H. P. Morey	92	1.1	4.3	3.2
South Dakota, Hazel, L. J. Parker	97	0.0	2.6	0.0
Minnesota, Elk River, H. O. Dickey	97	1.6	0.0	3.1
North Dakota, Hillsboro, Bagstad & Swenson	97	3.6	3.6	0.0
UNCERTIFIED, Vicksburg, Miss.	91	2.2	8.8	0.0
Maine, Ft. Fairfield, S. Cohen & Company	96	1.6	2.1	4.8
Vermont, Plainfield, Perry & Eason	98	3.7	.5	1.5
South Dakota, Bryant, John Everson	93	.5	2.2	0.0
UNCERTIFIED, Natchez, Miss.	85	0.0	.6	2.4
Michigan, Manton, George Harrison	92	1.8	.4	0.0

* Average of 8 plats; yield records lost.

SUMMARY OF FOUR YEAR'S WORK WITH CERTIFIED SEED.

During the past four years, eight tests have been conducted by the writers to determine the value of certified over uncertified Irish potato seed. In each test conducted, the certified have proved superior to the uncertified seed. This has been especially noticeable in the case of the Triumph variety because it is more susceptible to mosaic than the Cobbler variety. The average yield per acre of marketable potatoes of 52 samples

of certified Triumph seed was 120.2 bushels compared to an average yield per acre of 84.2 bushels for 21 samples of uncertified seed of the same variety or an increase of 42.8 per cent. The average yield per acre of marketable potatoes of 28 samples of certified Cobbler seed was 163.8 bushels compared to an average yield per acre of 128.2 bushels for 7 samples of uncertified seed of the same variety or an increase of 27.8 per cent. The greater yield of Cobblers over the Triumphs in these tests is due in part to their being planted on better soil.

The results from the Irish potato tests conducted during the past four years prove that certified seed are much superior to uncertified seed. They also indicate that there is a difference in the quality of certified seed produced by individual growers within a state. Therefore, too much stress cannot be put upon the value of keeping the tags which give the name or certificate number of the grower and which accompany each sack of certified seed.

