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Erwin Louis LeClerg

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# Performance of Irish Potato Varieties in Louisiana

By

E. L. LECLERG



LOUISIANA STATE UNIVERSITY

AND

AGRICULTURAL AND MECHANICAL COLLEGE

AGRICULTURAL EXPERIMENT STATIONS

W. G. TAGGART, *Director*



# PERFORMANCE OF IRISH POTATO VARIETIES IN LOUISIANA<sup>1</sup>

*By*

E. L. LECLERG<sup>2</sup>

Due to the present scarcity of labor and increase in cost of production of Irish potatoes, the grower is confronted with problems that will require greater efficiency in every detail of his work. Also, the probable greater difficulty in obtaining nitrogenous fertilizers and chemicals for seed treatment makes it imperative to give more consideration to the many details involved in growing this crop.

During the past 10 years the United States Department of Agriculture and many of the potato-growing States have been trying to solve their major problems by producing new varieties with better quality, higher yielding ability, and resistance to diseases and insects. Fortunately some of these new varieties are quite well adapted to Louisiana conditions. If grown, they will be more profitable to the grower because of their high yields and their disease resistance.

For the past 3 years the United States Department of Agriculture in cooperation with the Department of Horticulture of the Louisiana State university has conducted yield tests with a number of the new varieties as well as some of the old ones in 4 locations in Louisiana. The results of these tests and a discussion of the new varieties are presented in this bulletin so as to assist the growers in formulating plans for increased production of potatoes during the present emergency.

## PROCEDURE AND MATERIALS

The tests herein discussed included 13 varieties. The seed tubers of all of the varieties tested were grown each year by the United States Department of Agriculture at Presque Isle, Maine, and were kept in cold storage at Baton Rouge, Louisiana, until planting time.

Each test was arranged in randomized blocks with single-row replica-

<sup>1</sup> Cooperative investigations by the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, Agricultural Research Administration, United States Department of Agriculture, and the Department of Horticulture of the Louisiana Agricultural Experiment Station.

<sup>2</sup> Pathologist, Division of Fruit and Vegetable Crops and Diseases, headquarters at Baton Rouge, Louisiana.

tions of 25 hills each. Experiments were made at Baton Rouge and Lafayette in 1940, 1941, and 1942; at Houma in 1940 and 1942, and at Thibodaux in 1941 and 1942. The data were analyzed by the analysis of variance.

One should not conclude that one variety is of higher yielding ability than another when only small differences exist between them. There is no way to determine relative yielding ability of any crop with absolute accuracy. Difference in yield from adjacent plots, planted from the same seed lot, may occur, due in most cases to differences in soil. This effect of soil differences on yielding ability is overcome to a considerable extent by having a number of plots (replications) of each variety in the test. Even with replication, differences remain, which are said to be due to chance.

Methods of analysis of yield data are available to determine how large a difference is necessary between the yield of any two varieties to be considered a real difference. At the bottom of Table 1 is given the "differences required for significance" between the mean yields of any two varieties. For the yield of two varieties to be significantly different from each other the difference between the mean yields should be as great or greater than the figures given at the bottom of Table 1. For example, compare Irish Cobbler and Triumph where the difference is  $143 - 127 = 16$  bushels. This difference is less than the 29 bushels needed for significance, thus indicating that the yielding ability of Irish Cobbler and Triumph was not significantly different in the tests under consideration.

## **NEW POTATO VARIETIES**

Many of the diseases of potatoes in Louisiana are caused by viruses, others by fungi, and still others by bacteria. The most important virus diseases are leaf roll, spindle tuber, rugose mosaic, and mild mosaic. Common scab, early blight, and southern blight are the important fungus diseases. Bacterial ring rot is the most destructive bacterial disease in Louisiana.

The production of new potato varieties resistant to disease is one of the principal objectives of those engaged in potato breeding in the United States.

The following discussion presents some of the outstanding characteristics of the new potato varieties that were included in the yield tests.

### **EARLY-MATURING VARIETIES**

#### **Earlaine**

The Earlaine potato was developed by the United States Department of Agriculture at Presque Isle, Maine. It originated from a cross between Irish Cobbler and an unnamed seedling variety, S43055, the ancestry of

which included 3 early varieties, Irish Cobbler, Triumph, and S24642.

The tubers are white, round, regular in outline, with eyes of medium depth. This variety is very highly resistant to mild mosaic under field conditions. Under Louisiana conditions Earlane is somewhat later in maturity than Triumph.

### **Red Warba**

The Red Warba was developed by the Minnesota Agricultural Experiment station. It is a sport from the Warba variety.

The tubers are round, with eyes of medium depth. The skin is smooth and red with white striations or blotches. These blotches do not affect the cooking quality of the tubers. Red Warba has resistance to mild mosaic. This variety matures in about the same length of time as Triumph.

### **Warba**

Warba is also the result of potato breeding work by the Minnesota Agricultural Experiment station.

The tubers are round and blocky. The skin is smooth and creamy white. Eyes are pink and of medium depth. The vines of Warba are less injured by excessive heat than those of the Triumph variety. This variety is resistant to mild mosaic, and is as early as Triumph.

## **LATE-MATURING VARIETIES**

### **Chippewa**

The Chippewa was produced as a result of the potato-breeding program of the United States Department of Agriculture. This variety also has shown a high degree of resistance to mild mosaic. It is not resistant to leaf roll or spindle tuber. Under conditions of hot, dry weather the leaves of Chippewa are severely affected by non-virus leaf roll. Under these conditions rolling extends from the base to the top of the plant.

The tubers are smooth, regular in form, and oblong to egg-shaped. They are slightly longer in proportion to the width than the tubers of Katahdin. The eyes are few in number and very shallow.

Chippewa is slightly earlier than Katahdin in Louisiana. It does not keep in storage as well as Katahdin.

### **Houma**

The Houma variety was produced by the United States Department of Agriculture and selected by the Louisiana Agricultural Experiment station. This variety combines resistance to mild mosaic with the ability to produce large yields of smooth tubers of very high cooking quality. Houma is susceptible to leaf roll, spindle tuber, rugose mosaic, and early



olight. Shortly after this potato was named it was observed in Louisiana that early blight attacked this variety at an early stage of development causing destruction of foliage before the plants were very large.

The tubers are smooth, with shallow eyes, nearly round, and slightly flattened at the apex. Houma is somewhat earlier than Katahdin under Louisiana conditions.

### **Katahdin**

The Katahdin is a white potato produced by the United States Department of Agriculture. One of the important characteristics of this variety is its ability to produce tubers with desirable shape even under adverse soil and climatic conditions. It is one of the most widely adapted varieties now grown.

The tubers are round to oblong, and thick; usually more nearly round. The skin is smooth and the eyes are few and very shallow. Tuber formation begins very early in the season.

The Katahdin was bred for resistance to mild mosaic. This disease has never been observed in any Katahdin fields in Louisiana. It also possesses some resistance to rugose mosaic. The Katahdin, however, is very susceptible to leaf roll and spindle tuber. Under hot, dry weather conditions the lower leaves of this variety frequently roll and resemble leaf roll.

The Katahdin has excellent keeping qualities. Therefore, growers with adequate storage facilities should find this a good potato to supply local and southern markets after the shipping season for Triumph is completed.

### **Mohawk**

The Mohawk potato is the latest of the new varieties produced by the United States Department of Agriculture. It is a selection from the cross of Green Mountain and Katahdin.

The tubers are white, somewhat oblong, smooth, with medium shallow eyes. It is later in maturity than Katahdin in Louisiana.

### **Pontiac**

Pontiac is a selection from a cross between Triumph and Katahdin, made at the Michigan Agricultural Experiment Station.

The tubers are red, large, oval to somewhat flattened, with deep eyes. As far as is known it is not especially resistant to any disease. In Louisiana this variety is somewhat earlier than is Katahdin.

### **Sebago**

Sebago was produced as the result of breeding for resistance to late

blight by the United States Department of Agriculture. While it is not as highly resistant to late blight as desired, it has shown more resistance than any of the commonly grown commercial varieties in many areas. It is resistant enough to late blight, however, to be grown in most seasons without spraying, and in seasons of severe epidemics it would require fewer applications of Bordeaux mixture than the more susceptible sorts. Its tubers show considerable resistance to the tuber rot initiated by the late-blight fungus.

### **Sequoia**

The Sequoia variety was recently selected by the North Carolina Agricultural Experiment station in cooperation with the United States Department of Agriculture. It was selected because of its ability to withstand attacks of late blight, leafhoppers, and flea beetles.

This potato is very late, but produces large, smooth, somewhat flattened tubers.

It is well to remember that a variety of potatoes that does well in one section of the country may be of little value in another. Therefore, do not buy high-priced seed because some new variety is superior in some other section, without knowing that it is adaptable to your conditions. Information on this point can be secured from your county agricultural agent or from the Department of Horticultural Research of the Louisiana State university at Baton Rouge. Comparative yield tests of new varieties are made at Baton Rouge and information can be furnished regarding the behavior of new varieties. If the new variety has not been tested, it is advisable to buy only a small quantity of seed stock and try it the first year alongside of your standard variety.

## **RESULTS OF TESTS**

The average yield of No. 1 tubers of the 13 varieties is given in Table 1 for all of the tests at the 4 locations and the percentage of No. 1 tubers is given in Table 2. In summarizing the data the varieties have been divided into two groups on the basis of early and late maturity.

### **Early-Maturing Varieties**

It is apparent that of the early-maturing red varieties, Red Warba yielded at least twice as many bushels per acre as did Triumph at each of the locations (Table 1). In addition to the greater yield, this variety produced about 20 per cent more No. 1 tubers than did Triumph (Table 2). Red Warba is as early as Triumph and has resistance to mild mosaic, which is one of the causes of "running out" of potatoes. Of the early, white varieties, Warba is far superior in yielding ability and production,



of percentage of No. 1 tubers to either Irish Cobbler or Earlane in Louisiana.

Reports indicate that the acreages of Red Warba and Warba are increasing each year. Latest figures show that about 55,000 bushels of Red Warba and 44,000 bushels of Warba were certified for seed in 1941, the greater part being grown in Minnesota. With the exception of color, these two varieties are very similar. The Red Warba, a sport of Warba, produces red tubers with splashes of white and the Warba produces white tubers with pink eyes. These varieties have been discriminated against to a certain degree in the past because of their tuber color. Both, however, are very early and produce high yields in Louisiana.

Due to the demand for greater production, it may be that these color characters of the tubers may be less objectionable now than previously. The Red Warba probably would compete better with Triumph than Warba because it is red in color. Due to its higher yielding ability and earliness, it may find a place in the early-production areas of Louisiana.

### **Late-Maturing Varieties**

Consideration of the 7 late, white varieties shows that Katahdin, on the average, produced the highest yield (Table 1). With regard to the percentage of No. 1 tubers, this variety was as good or better than any other variety tested (Table 2).

The Katahdin keeps very well in storage. Hence growers with proper storage facilities on the farm should find this variety well adapted for supplying the local and southern market after the early shipping season is completed.

The resistance of Katahdin to mosaic diseases is a very desirable character, considering the necessity of purchasing seed stocks each year. It can be grown for at least 2 years from home-grown seed, provided the best certified seed is obtained the first year and subsequent crops are not grown too close to potato fields containing virus diseases. Obviously, this will eliminate the outlay of money for certified seed each year. Due to the high cost of good certified seed, caused by the war situation, this represents a very important consideration in any potato-production program.

The most serious undesirable character of the Katahdin is the small number of eyes on the tubers. This feature necessitates special care in cutting to insure that there is an eye on each seed piece. This, of course, results in making the cost of seed per acre somewhat higher than if varieties with more eyes on the tubers were used. However, this additional cost is more than offset by the high yields obtained and the fact that home-grown seed can be saved and planted for at least 2 seasons.

TABLE 1. FIELD (BUSHELS PER ACRE) OF NO. 1 TUBERS OF 13 VARIETIES OF IRISH POTATOES TESTED IN LOUISIANA.

VARIETY	Tuber Color	BATON ROUGE*		LAFAYETTE*		HOUMA*		THIBODAUx*	
		3-year average	2-year average	3-year average	2-year average	2-year average	1-year average	2-year average	1-year average
<i>Early-maturing varieties</i>									
Red Warba.....	Red	...	215	...	152	...	190	...	231
Warba.....	White	205	214	137	132	179	172	138	235
Irish Cobbler.....	White	143	148	130	124	142	123	110	...
Earlaine.....	White	133	136	86	75	152	168	122	157
Triumph.....	Red	127	127	102	74	151	84	84	130
<i>Late-maturing varieties</i>									
Pontiac.....	Red	...	214	...	158	...	171	165	177
Katahdin.....	White	186	212	158	170	175	172	138	218
Houma.....	White	177	187	147	155	184	173	152	176
Green Mountain.....	White	150	164	137	152	162	161	152	200
Chippewa.....	White	149	156	118	114	131	93	156	...
Sebago.....	White	148	152	157	170	168	188	131	161
Mohawk.....	White	138	151	100	94	132	130	117	172
Sequoia.....	White	...	139	...	175	...	148	137	159
Difference required for significance.....		29	32	31	27	33	23	32	41

Not all varieties were tested each year. The two averages represent the yields for the respective number of years the varieties were tested at each location.

TABLE 2. PERCENTAGE OF NO. 1 TUBERS PRODUCED BY  
13 VARIETIES OF IRISH POTATOES TESTED IN LOUISIANA.

VARIETY	Baton Rouge	Lafayette	Houma	Thibodaux	Average
<i>Early-maturing varieties</i>					
Red Warba.....	82	79	78	73	78
Warba.....	84	81	77	74	79
Irish Cobbler.....	72	77	76	74	75
Earlaine.....	69	60	68	76	68
Triumph.....	72	62	67	56	64
<i>Late-maturing varieties</i>					
Pontiac.....	86	80	83	83	83
Katahdin.....	82	83	82	80	82
Houma.....	79	77	76	73	76
Green Mountain.....	76	71	82	80	77
Chippewa.....	75	66	65	82	72
Sebago.....	80	78	82	85	81
Mohawk.....	81	79	82	73	79
Sequoia.....	79	86	84	89	84

### SUMMARY

Yield tests with a number of new Irish potato varieties as well as some old ones were made in Louisiana for three years at four locations.

Of the early-maturing red varieties, Red Warba yielded at least twice as many bushels per acre as Triumph at each of the locations. In addition, this variety produced about 20 per cent more No. 1 tubers than Triumph. Red Warba is as early as Triumph and moreover has resistance to mild mosaic, which is one of the causes of "running out" of potatoes.

Katahdin was the highest yielding late, white variety. With regard to the percentage of No. 1 tubers, this variety was as good or better than any variety tested.



