

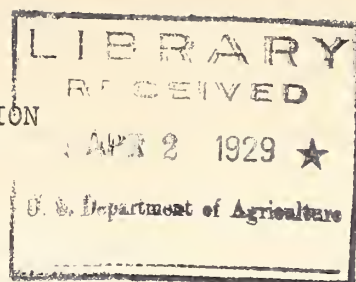
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PROGRESS OF THE BARBERRY ERADICATION
CAMPAIGN IN OHIO, 1928



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Introduction

Common or European barberry (Berberis vulgaris L.) is the alternate host of a fungus which causes the black stem rust of wheat, oats, barley, and rye. Black stem rust is commonly recognized as being the most destructive of all fungi which occur on small grains. Millions of bushels of grain are lost annually in the United States on account of this disease. It has been definitely established that common barberry harbors and spreads the black stem rust fungus and that the elimination of barberries has materially decreased and will probably reduce further losses from this cause. A campaign to eradicate all common barberries in thirteen north-central States was started in April, 1918. Ohio is one of these thirteen States.

Organization

The work in Ohio has been conducted cooperatively by the Office of Cereal Crops and Diseases of the Bureau of Plant Industry of the United States Department of Agriculture, the Bureau of Plant Industry of the Ohio State Department of Agriculture, the Conference for the Prevention of Grain Rust at Minneapolis, Minnesota, the Ohio Agricultural Experiment Station, the College of Agriculture at Ohio State University, and the Ohio Farm Bureau Federation assisted by other agricultural and commercial agencies.

Permanent headquarters for this campaign in Ohio are constantly maintained at the Botany Department, at Ohio State University. A State Leader is employed continuously, and a summer field force, which usually averages 32 men, is hired annually.

Field Personnel

Our field men are chosen principally from the upper classmen and the graduate students of universities of recognized standing. A premium is placed on farm experience and general and special training. Men having past experience in the work are given preference, provided of course that their previous service has been satisfactory.

*State Leader in Ohio

Financing

The barberry campaign in Ohio is supported chiefly by funds supplied by the United States Department of Agriculture. During the last six years the Federal Government has allotted an approximate annual average of \$32,000 to Ohio for this work. During the last five years Ohio has been one of three of the States involved which was granted annually a maximum share of Government barberry eradication funds. This money has been used to bear overhead costs, to pay salaries, and subsistence expenses of field men, and for transportation facilities.

The Ohio Legislature has voted a cash appropriation for the last three bienniums for this work. This has constituted an annual average contribution of approximately \$5,000. This money has been spent in the purchase of quantities of chemicals for use in killing barberries and for the payment of salaries and expenses of inspectors of the Ohio Division of Agriculture.

Indirect and more or less intangible assistance of indispensable value has been given by the other cooperating agencies in the form of office space, storage space, and printed and illustrative material, besides personal services of members of the State College of Agriculture extension staff.

Barberries and Stem Rust in Ohio

Black stem rust epidemics in Ohio are usually local in extent, but they are often very severe. These local outbreaks may embrace only a part of a field or they may extend over several townships. Frequently the attacks are so severe that the crops involved are not harvested. The loss of wheat in Champaign County, Ohio, in 1922 alone was estimated at \$100,000. In some Ohio localities wheat raising has been abandoned on account of the yearly recurrence of scourges of black stem rust. Oats, barley, and rye are frequently affected in a similar manner. Scores of records are on file in the State Leader's office of individual cases in which black stem rust has been observed spreading from infected barberries to near-by grain, and others in which infected barberries have been located through the discovery of stem-rust epidemics. In almost all of these cases checks have been made on rust control accomplished by the destruction of the barberries concerned. The results have been very conclusive and gratifying.

Summary of Campaign Progress, 1918 - 1927

During 1918 very few Ohio barberries were actually eliminated. That year the workers were principally concerned with the business of collecting data on the general prevalence and distribution of barberries and on their relation to the recurrence of stem-rust epidemics. Sufficient

information was obtained by the investigators that year to establish the fact that common barberries play a very essential role in the initiation of black stem-rust epidemics in Ohio grain fields.

Actual eradication work was started in Ohio on a large scale in 1919. A preliminary survey was made of practically all of the larger cities and towns in Ohio. Large numbers of barberries were found in the nursery plantings throughout the State, especially in Lake and Miami Counties. The Ohio Division of Agriculture placed a quarantine against the propagation and movement of common barberries and all their horticultural varieties, within the State, effective December 15, 1919. It had been assumed that by far the greatest number of barberries existed in cities and towns, but while the preliminary city survey was in progress considerable information was obtained, incidentally, on the existence of barberries in rural districts.

In the spring of 1920 it became apparent that a survey of farm lands must be made if ultimate success of the eradication program was to be attained. Accordingly, the first systematic farm-to-farm survey in search of barberries was begun immediately.

The first systematic rural survey has been in progress continuously during the period 1920 to 1928, inclusive. The county has been used as a unit of survey, and progress has been practically always contiguous from the western border of the State toward the eastern boundary. The survey method employed has become more and more intensive as time has passed. Consequently, the size of the territory covered per given amount of money used has constantly decreased. The increase in numbers of barberries located in northeastern Ohio has, of course, been a contributing factor to this situation. At the close of 1927 about 87.14 counties had been covered by first survey.

An annual resurvey program was carried on each year, during the period 1921 to 1925, inclusive, in counties which had already been covered by first survey. The purpose of the resurvey was to ascertain whether sprouts or seedlings were present at places where an attempt had previously been made to destroy barberries.

Prior to 1923 the chief means employed to destroy barberries was by digging, but this proved to be very unsatisfactory. Salt and kerosene have been used as killing agents with some exceptions during the period 1923 to 1928, inclusive.

In 1924 a second systematic survey was made of two counties for the purpose of testing the efficiency of first survey. In one county the results were satisfactory and in the other they were discouraging. Second survey operations were suspended pending completion of the first survey.

At the close of 1927 a total of 391,913 barberry bushes and 1,627,863 barberry seedlings was found in the State on first plus second survey.

From the beginning almost every available educational and publicity vehicle has been utilized in providing the public with information concerning the nature of the campaign and its progress.

Coordinate scientific observations have been made on the habits of the barberry and the behavior of the black stem rust fungus.

Summary of Campaign Progress - 1928

The continuation of first survey was the major activity in Ohio in 1928. Approximately 61 per cent of Ashtabula County was covered by this activity. This is a relatively small amount of territory to be covered when it is considered that 3,734 man days were required. However, the coverage of this area was by far the most difficult task which has been attempted since the campaign started in Ohio. The nature of the soil, the poor drainage conditions, the type of existing vegetation, the farm practices, the large number of escaped barberries found, and the unfavorable weather were the factors which were responsible for slow progress. During the summer 12,670 barberry bushes were found and destroyed on 274 properties in Ashtabula County. The greater part of these were escaped bushes in woodlands. In addition, 187,985 barberry seedlings were found within the county and were also destroyed. Almost four carloads of salt were required to accomplish the destruction of these barberries.

Rather extensive experiments, which were started in 1926 and continued in 1927 concerning the effect of certain chemicals on barberry seed and seedlings and on the natural death rate of seedlings as well as on the viability of barberry seed, were carried forward in 1928. In addition, a new series of seed and seedling experiments, which will eventually provide much data on behavior in various habitats, were started in northeastern Ohio, in 1928.

Two townships of Preble County were covered by second survey in 1928. To accomplish this feat 213 man days were required. This progress was rapid compared to the rate of first survey speed in Ashtabula County. No barberries were found on second survey this year.

The 1928 publicity and educational effort was one of considerable proportions. All fourth, fifth, and sixth grades in 36 county school systems were reached with packets of study material. In all, packets were mailed to 7,700 grade teachers. Materials were also provided for use in our normal schools, colleges, and universities. Numerous demonstrations were held in store windows and in lobbies of business places. Roadside signs were used. Fair and special meeting demonstrations were held. Newspapers were used extensively, and articles appeared in farm journals. Circular letters with appropriate literature were mailed by the thousands to farmers. Special mailing lists were used. Thousands of personal contracts were made by field men in connection with survey operations.

Future Campaign Plans

In 1929 the first survey of Ohio is to be completed. It is expected that this operation will take much time and money, for the area to be completed is comparable to the area covered in 1928. In addition to the completion of the first survey, it is planned to finish the second survey of Preble County in 1929 and to do second survey in an adjacent county if funds permit. Some resurvey may also be attempted in counties of western Ohio in 1929. The publicity and educational work, as well as the research investigations now in progress, will be continued in 1929.

After 1929 the principal activity of the campaign for a period of several years will be the completion of second survey and the furtherance of pertinent education.

