

PROGRESS IN BARBERRY ERADICATION IN ILLINOIS DURING 1919.

By L. R. TEHON, UNITED STATES DEPARTMENT OF
AGRICULTURE, URBANA.

The barberry eradication campaign had its beginning, in the state of Illinois, in the spring of 1918 under the leadership of Dr. F. L. Stevens and Dr. H. W. Anderson. The results of the year of 1918, briefly restated from Dr. Anderson's report, indicated 36,419 bushes found. Dr. Anderson's report states confidently that "seventy per cent of all of the barberries in Illinois have been removed, or will be removed before next spring". Dr. Anderson likewise speaks of bushes escaped from cultivation as follows: "It is evident, however, that the shrub is not very widely distributed in the woods and pastures to date". As it now appears, these last two statements by Dr. Anderson were far too optimistic.

The campaign of 1919 opened in March under the leadership of Dr. F. E. Kempton, Dr. F. L. Stevens resigning his place in favor of Mr. P. A. Glenn, Chief Inspector for the State Division of Plant Industry. Dr. Kempton left Illinois to become federal leader of the campaign on June 30, 1919; and was succeeded by L. R. Tehon.

Through provisions contained in the Plant Inspection Act of 1917, as amended in 1919, the common barberry and the purple-leafed barberry were declared a nuisance by the state Director of Agriculture, after a public hearing held on August 9th.

The plan of the campaign during the past year has been different from that of the first year. The slogan "Barberry or Bread" has been dropped, and no attempt has been made to cause this campaign to appear as anything other than one of the many campaigns for agricultural improvement through plant disease control. Use has not been made of high school students or other persons who were not employed by the United States Department of Agriculture in the immediate tasks of scouting for, and removing located, barberries. The number of men employed has varied from one in March and December to twelve in July. The plan of the campaign has been to assign a squad of men to a county and to work thoroughly every town in that county. The start was made in the northern part of the state and made good progress southward reaching Pike county in the west, Sangamon, Christian, and Macon counties in the center and Crawford and Lawrence counties in the Wabash Valley. The countryside is as yet very largely untouched, although a great deal of accurate data has been collected. Single towns in other portions of the state have also been worked.

From March 1st until December 31st, the amount accomplished has been entirely satisfactory both to the State Department of Agriculture and to the United States Department of Agriculture. The tangible progress of the year may be summed up in the following: The number of towns visited was 632; the approximate population reached was 1,169,200; barberries were found on 2,977 properties and eradicated from 2,921; the number of bushes found was 45,370 and the number eradicated 39,879. About 350 towns, distributed among about 60 counties, are known to be free from *Berberis vulgaris* and the variety *purpurea*.

Infected barberry was found in or near 54 towns, distributed among 18 counties. The total number of infected bushes found was 2,859; the earliest date of reported infection was May 2nd at Winnebago, in Winnebago county. The latest date of reported infection was on September 2nd at Cornell, in Livingston county. The most southerly point of infection reported was at Bayles, in Pike county.

The future work of barberry eradication remains to be done in the country districts, and finally in a clean-up of areas of dense population such as Chicago, Evanston, and East St. Louis. And the importance of this part of the program is not by any means small.

The accompanying map shows the location, and indicates the relative extent, of "escaped" or "wild" plantings. Dr. Anderson's statement relative to escaped barberries will be remembered. It is worthy of note that after two years of work there have come to our attention, without special emphasis being laid on that phase, at least 33 localities in which barberry is now growing wild. Dr. Anderson mentions only a single planting of escaped bushes in his 1918 report. Considerable interest obtains in regard to several of these plantings.

The country surrounding Galena (Jo Daviess county) seems to be an ideal habitat. One of our men writes that "the country about Galena is full of the pest. It would take a week for two men to get a thorough survey. The rocks and hills are ideal for barberry and they are found growing nice and big with beautiful red berries. Some of the farmers told me they use the leafy branches for feeding sheep, goats, etc., in winter. I would suggest that either this fall or next spring a couple of good men were sent out to do a good job. The farmers are very willing to cooperate".

During the past year, rust infection of wheat was particularly severe in Hancock county. Had it not been for dry weather and consequent early maturity of the grain a large percentage of loss would undoubtedly have occurred. Mr. Curtiss, in working this county, was able to locate a 500 acre tract of wooded hill land on the Mis-

mississippi near Hamilton in which large numbers of barberry are growing wild.

On November 22nd, one of our men visited Kankakee. His first letter reports rumors of a place where "there are millions growing wild!" and when his report came in for properties on which they actually occurred, he was able to show at least six properties and, at the most conservative estimate possible, 250 bushes. This was merely incidental to working the town of Kankakee.

Probably the most interesting area in which barberry has escaped from cultivation is in Knox county. The town of Henderson, a small village of about 160 inhabitants, was first settled in 1825. A few hedges were planted in the town by the early settlers, and those hedges up to the present year, were still in existence. Our field man, who at that time had established temporary headquarters in Galesburg, writes as follows: "When I went out there (Henderson) yesterday, I had the idea that one hours work would be sufficient, but found that it took two days. I found about 1,200 bushes altogether. The whole township is "infested" with barberries; and the bushes are large and growing wild. Mr. W. has timberland of 200 acres and the bushes are scattered all over it. Messrs. W., M., P., C., and P., also have a considerable amount. It seems that the "wild" bushes have been propagated from seed from the original hedges."

One instance of particular interest has come to our attention during the past summer as showing how the barberry may be of importance in the spread of rust to grains other than wheat.

Puccinia graminis avenae is the biological form on oats, *tritici* for rust on wheat. On a farm belonging to J. H. near Minooka, Illinois there was a rusted hedge of the common barberry approximately two hundred yards long containing about 600 bushes. The accompanying sketch, reproduced as clearly as possible from a field drawing, represents the relative positions of the several fields with respect to the barberry. The winter wheat directly east of the barberry was well protected by the intervening orchard. This fact, together with the earlier develop-

ment of the winter wheat, has resulted in a comparative freedom from rust.

About one-quarter of a mile south-east of the barberries, however, was a field of spring wheat with no protection from the infected barberry save distance. A pasture abutting upon the hedge extended southward, coming close to the wheat. *Hordeum jubatum* (squirrel tail) and *Agropyron repens* in the pasture were severely rusted. Rust had spread first from the hedge to the pasture grasses, and then from the hedge and pasture grasses to the spring wheat producing ninety per cent infection.

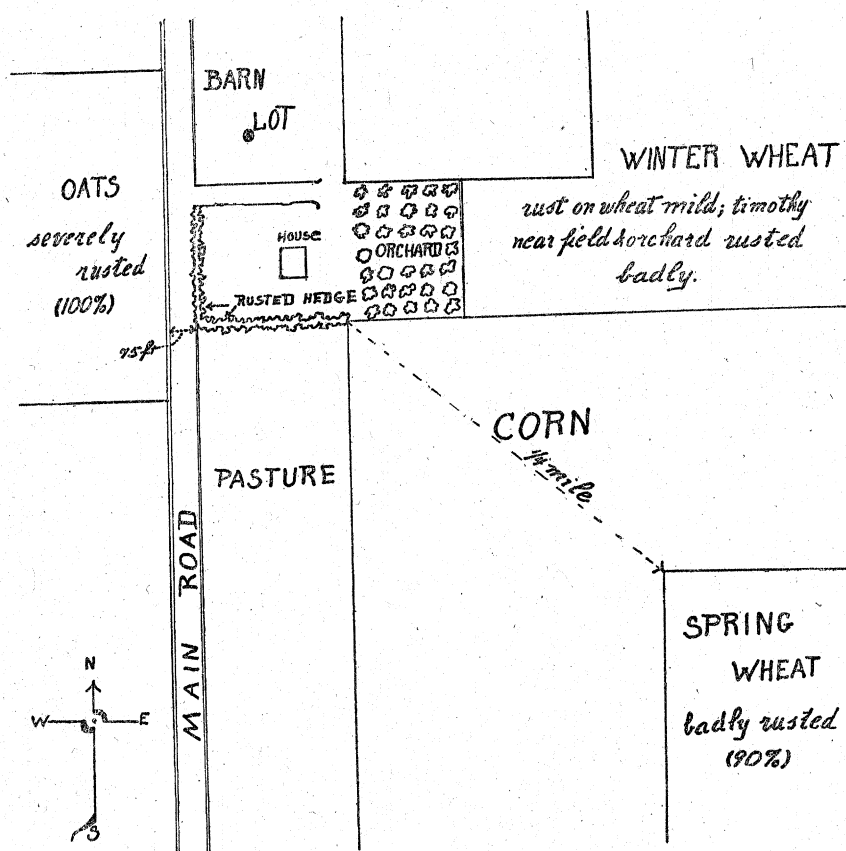
Directly across the road, and not seventy feet distant from the infected hedge, was a field of oats in which not a single stalk was free from rust. Grasses along the road and along fences, particularly *Dactylis glomerata* and *Agrostis alba*, were heavily rusted. About one and an eighth miles south of the infected hedge was a second field of oats (not shown on the sketch) which was infected only to the extent of seventy-five to eighty per cent, this being due partly to the influence of the infected hedge in increasing infection in the fields and grasses near it. The presence of rusted timothy near the orchard indicates also the possible influence of the barberry in spreading the *phlei-pratensis* form of rust.

Careful microscopic examination was made of oats from the above fields to eliminate the possibility of the rust being *Puccinia coronata*. The removal of the hedge in this case has removed an important source of infection in this neighborhood both for wheat and oats. Further control of the grass-weeds in which the mycelium of the rust may be perennial should serve as a further means of control.

The results of our year's work have served to enhance the significance of barberry eradication as a means of rust control. A large portion of the bushes have been removed from the towns. The countryside remains yet to be done. Information has accumulated to show that the barberry is not only present in great numbers in cultivation in the country districts, but has escaped from cul-

tivation in many places and in considerable quantity.

Now, after two years of work, and the knowledge that the worth and size of the task is gradually becoming clear, comes the news that the campaign is no longer to receive support from the federal government.



The farm of J. H. near Minooka, Illinois showing the relationship between infected barberry and neighboring fields of wheat and oats

