

Wisconsin Pest Summit

Feb. 3, 2015

A Brief History of Common Barberry Eradication in Wisconsin, 1918 to 2015

Adrian Barta

DATCP Pest Survey

Barberry, Wheat and Stem Rust

Stem rust (*Puccinia graminis*) is historically the most destructive disease of small grains

1916 stem rust epidemic cut N. American wheat yields by 2/3—estimated loss of >200 million bushels

1918 The War Emergency Board of American Plant Pathologists is formed with the goal of ensuring that the food supply in the nation would remain secure. This was accomplished by identifying important diseases and focusing efforts on these diseases through a collaboration of state and federal personnel.



Barberry, Wheat and Stem Rust

Common barberry (*Berberis vulgaris*) is the alternate host of stem rust

The association between rusted wheat and barberry was noticed as early as the 1600s

Barberry eradication effort was begun in 1918

BLACK STEM RUST SPREADS FROM COMMON BARBERRIES



to Wheat, Oats, Barley, Rye and other Grasses.



Rationale for eradicating common barberry

Remove early spring source
of rust inoculum

Reduce the likelihood of new
races of rust arising

Increase the lifespan of
wheat varieties

A well-liked
and useful plant

Wine,
jam,
dye,
tool handles,
fencing,
color



The Red Handed Anarchist of the Grain Fields



Common Barberry
(Harmful - Dig it out by the roots)
GROWTH
BARK
LEAVES
FLOWERS
BERRIES
SPINES

A Typical Common Barberry Bush

Japanese Barberry
(Harmless - Do not destroy it)
GROWTH
BARK
LEAVES
FLOWERS
BERRIES
SPINES

Common Barberry spreads black stem rust to wheat and other small grains, causing an annual loss of 50,000,000 bushels.

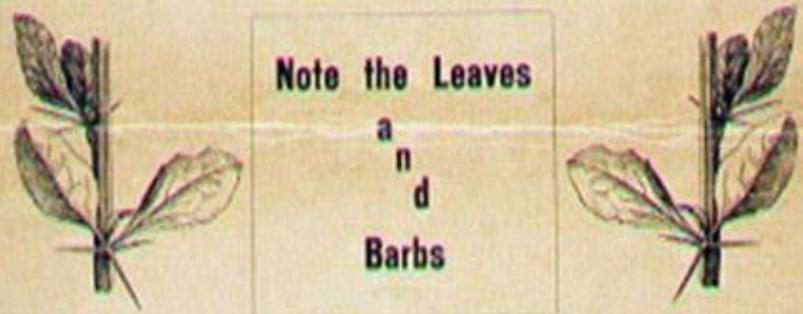
DESTROY IT NOW!

**THIS
BARBERRY
BUSH
IS A
KIN^{OF}_{THE} KAISER**

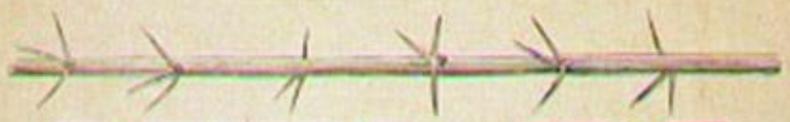
Its owner has been requested by the Nebraska State Council of Defense and the U. S. Government to dig it up and destroy it.

DO IT NOW!

**Barberry Eradication Day,
May 4th, 1918**



Note the Leaves
and
Barbs



HELP!

DESTROY AN ENEMY OF THE WHEAT CROP!
DIG OUT EVERY BARBERRY BUSH

They start black stem rust on grain. Help us locate every bush.
They are a cultivated, not a wild shrub. Owners must dig them up within

TEN DAYS

after notification. [See Senate Bill No. 139]

E. N. HAGAN, Commissioner of Agriculture and Labor

WARNING

OUTLAWED COMMON BARBERRY BUSHES have escaped from cultivation and may be found growing wild in woods, pastures and along fence rows and streams in this vicinity. They spread Black Stem Rust, a plant disease which annually destroys millions of bushels of Wheat, Oats, Barley and Rye. Common Barberry bushes have been condemned and must be destroyed.

Learn to Recognize them by

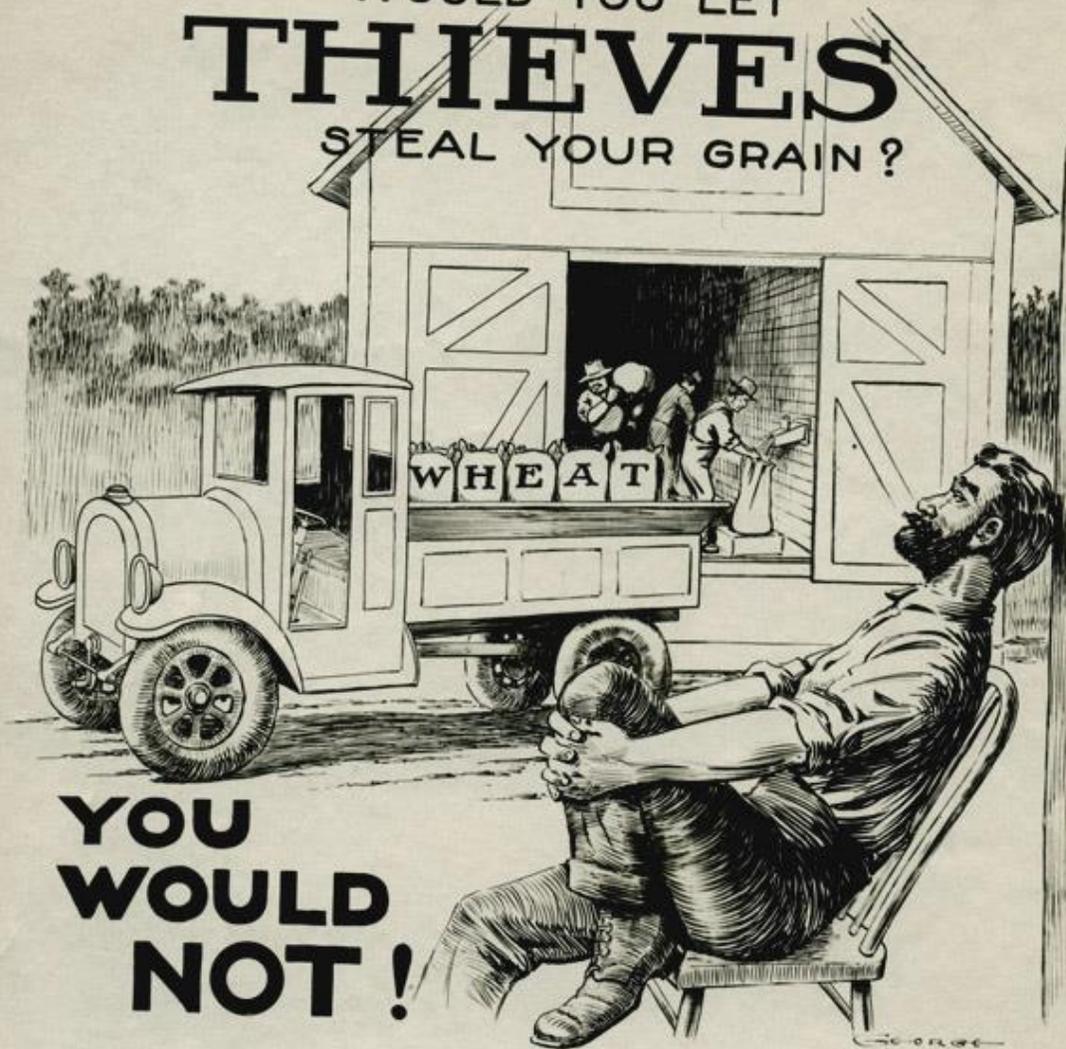


EXAMINE YOUR PLANTED SHRUBBERY—YOU MAY BE HARBORING A CRIMINAL

Japanese Barberry is Destroyed by the Post Office

REPORT the location of such bushes to the State Leader of Barberry Eradication, in care of your State Agricultural College or your State Department of Agriculture.

WOULD YOU LET
THIEVES
STEAL YOUR GRAIN?



**YOU
WOULD
NOT!**

THEN WHY LET **STEM RUST** DO IT?
DESTROY THE COMMON **BARBERRY**

U.S. DEPT. OF AGRICULTURE

THIS IS A

Common Barberry

AND IS AN

“ALIEN ENEMY”

The Minnesota Commission
of Public Safety, Order No.
28, requires the immediate
destruction of this bush.

STATE ENTOMOLOGIST

University Farm

St. Paul, Minnesota.

NATIONAL RUST BUSTERS CLUB



JOIN

NOW

N. R. B. C. Medal

Any boy or girl in Iowa can obtain a beautiful bronze medal like the one shown above and become a member of the National Rust Busters Club, if he or she will report a property on which common barberry bushes are growing.

Common barberry spreads a disease called "black stem rust," which destroys millions of bushels of wheat, oats, barley, and rye every year. Help us find these bushes and "bust the rust."

Of course, in order to find and report common barberry bushes, you must know what they look like and where they may be found growing. Every school is entitled to a complete set of educational material about the barberry, consisting of colored charts, posters, bulletins, a pressed specimen, and a lesson plan. Find out what the common barberry looks like and how it spreads black stem rust.

To report a common barberry, mail a small twig to the Barberry Eradication Office, Iowa State College, Ames, Iowa.





Iris Graves beside one of the common barberry bushes found in the area of escapes which was discovered as a result of her efforts.

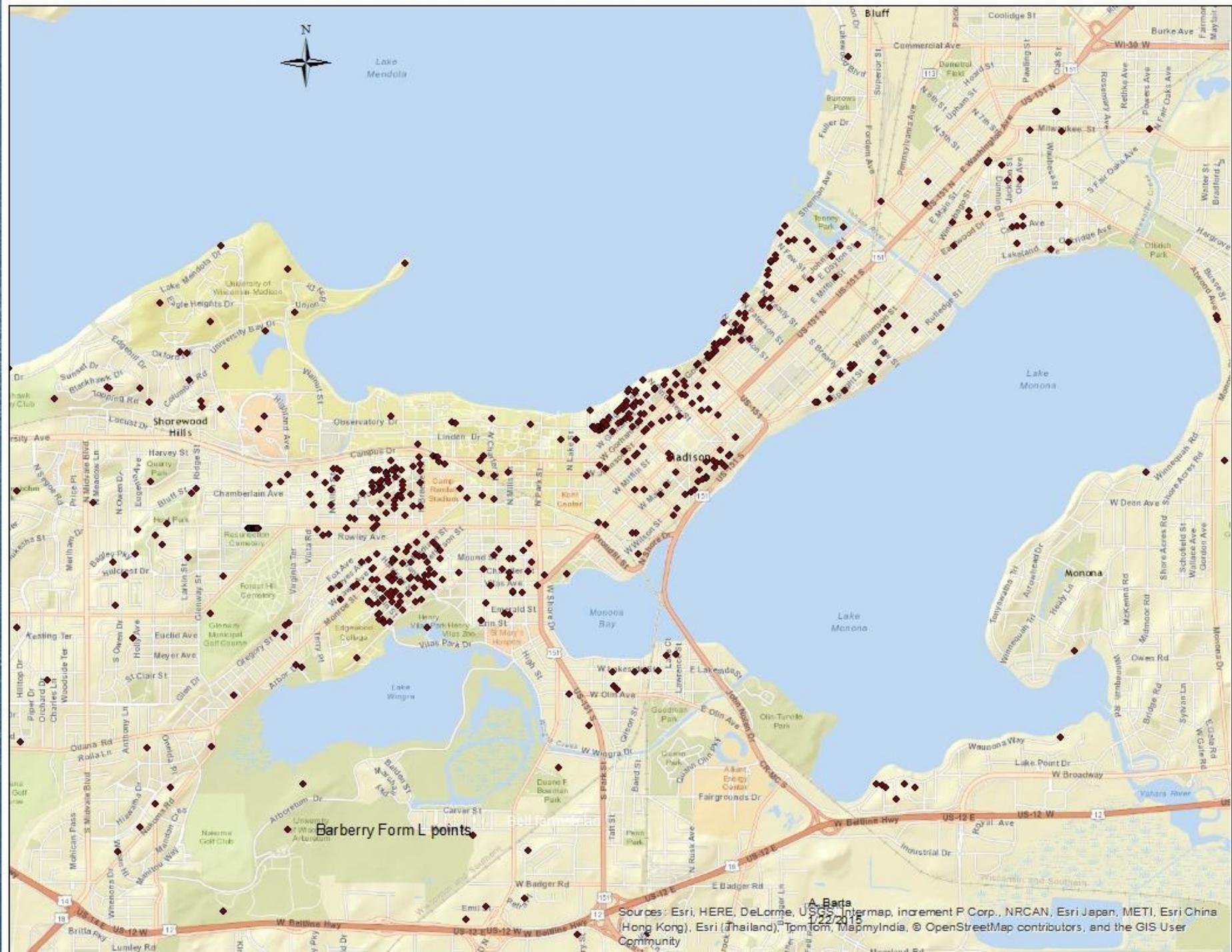




WI Barberry Eradication 1918-1976

Cooperative program between USDA and State Departments of Agriculture.

Crews went door-to-door, farm-to-farm, throughout the Upper Midwest, urban and rural, to find and destroy barberry bushes.



Lake Mendota

Barberry Form L points

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

WI Barberry Eradication 1918-1976

By 1934, 350 people were working on barberry eradication in Wisconsin

Found bushes at **18,442 properties** in the state

Between 1918 and 1977, Wisconsin crews
found and destroyed

5,782,536

barberry bushes in Wisconsin,
according to USDA records

RESURVEY

CHANGE OF TENANT OR OTHER INFORMATION

DISPOSITION OF BUSHES LEFT ON FORMER VISITS OR NEW FINDINGS							SEEDLINGS								
DATE	SCOUTS	BUSHES FOUND		BUSHES DESTROYED		BUSHES REMAINING	FOUND	DESTROYED	HOW	REMAINING					
		PLANTED	ESCAPED	PLANTED	ESCAPED						HOW				
							7/1/22 2275	2375	D	0					
							9/21/22 150	150	S	0					
SPROUTING BUSHES FOUND		SPRTNG. BUSHES DEST.		HOW	SPROUTING BUSHES REMAINING	CHEMICALS USED									
SCOUTS	PLANTED	ESCAPED	PLANTED			ESCAPED	KIND	AMOUNTS FURNISHED BY							
7/1/22	A-7	-	125	-	125	D									
8/24/23	R-9		100	-	100	S									
10/20/27	O+S		200		200	S									
5-20-37	Ryan		35		35	S									
							8/31/27 Salt			500#					
							10/24/27 Salt			100#					
							salt								40

159. ORIGINAL SURVEY 5 CITY RURAL

COUNTY Lank CITY Lank City

OWNER Messrs August & Charlotte Lueders MAIL ADDRESS

RENTER R#1 ADDRESS PROPERTY

LEGAL DESCRIPTION SE4, SE4, Sec 11, T9N, R6E. QUARTER SECTION TOWNSHIP RANGE OR STREET AND NUMBER

NUMBER OF BARBERRIES				KIND	RUST	LEGAL NOTICE SERVED			KIND OF CHEMICALS USED			
SIZE	PLANTED	ESCAPES	G-P		+	-	DUG	TREATED	REMAINING	OWNER	STATE	FEDERAL
LARGE		100										
MEDIUM												
SMALL												
TOTAL							2100					
SEEDLINGS		2000										

ATTITUDE OF OWNER

SCOUTS {

DATE 1918

DESCRIPTION OF AREA WITH MAP ON BACK

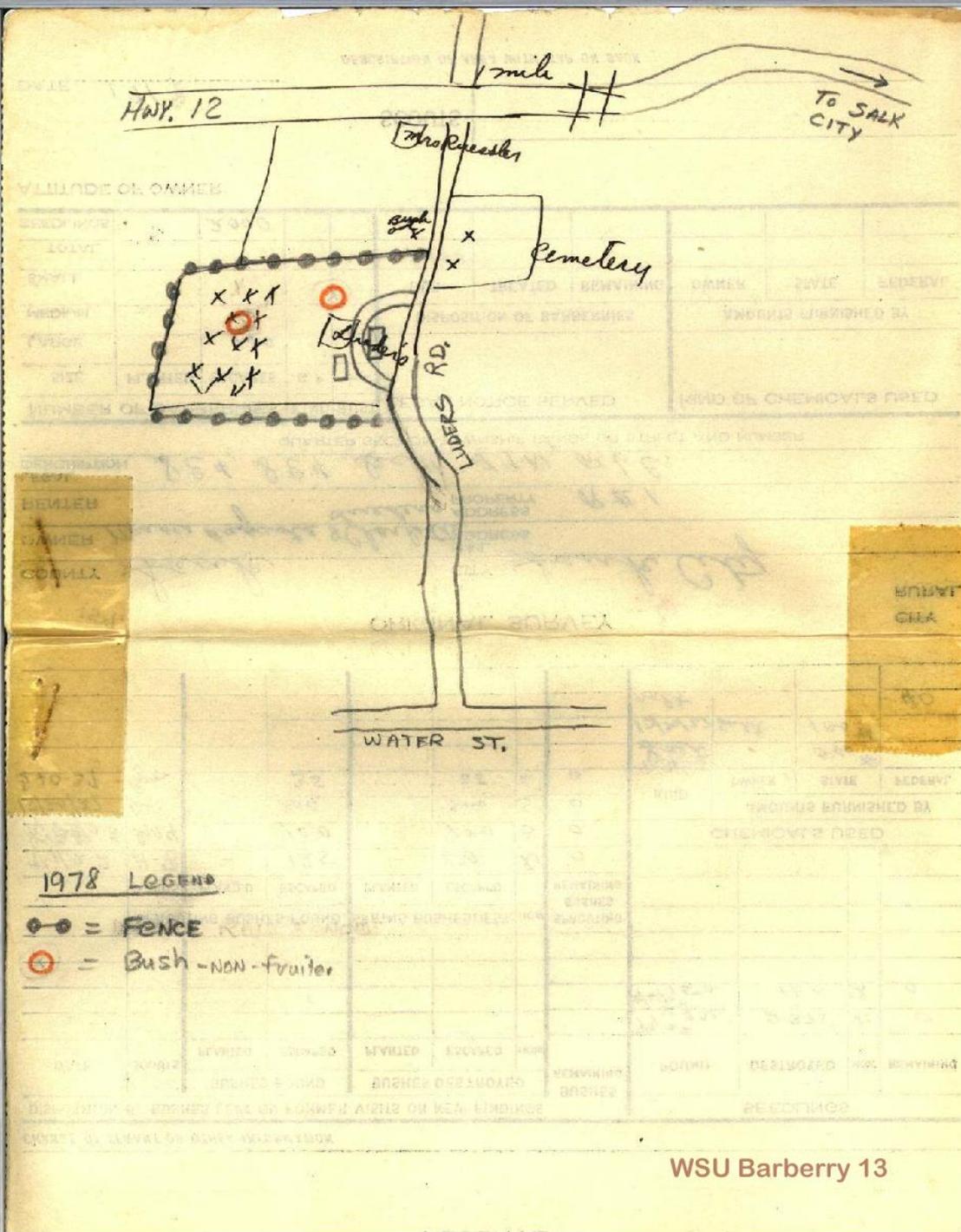




FIG. 13.—THE PROPER WAY TO REMOVE BARBERRY BUSHES

Dig deep enough to get all of the roots out with the plant to prevent sprouting. Heavy canvas gloves protect the hands.





RESURVEY

CHANGE OF TENANT OR OTHER INFORMATION

DISPOSITION OF BUSHES LEFT ON FORMER VISITS OR NEW FINDINGS							SEEDLINGS								
DATE	SCOUTS	BUSHES FOUND		BUSHES DESTROYED		BUSHES REMAINING	FOUND	DESTROYED	HOW	REMAINING					
		PLANTED	ESCAPED	PLANTED	ESCAPED						HOW				
							7/1/22 2275	2375	D	0					
							9/21/22 150	150	S	0					
SPROUTING BUSHES FOUND		SPRTNG. BUSHES DEST.		HOW	SPROUTING BUSHES REMAINING	CHEMICALS USED									
SCOUTS	PLANTED	ESCAPED	PLANTED			ESCAPED	KIND	AMOUNTS FURNISHED BY							
7/1/22	A-7	-	125	-	125	D									
8/24/23	R-9		100	-	100	S									
10/20/27	O+S		200		200	S									
5-20-37	Ryan		35		35	S									
							8/31/27 Salt	500#							
							10/24/27 Salt	100#							40

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COUNTY Lank CITY Lank City

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LEGAL DESCRIPTION SE4, SE4, Sec 11, T9N, R6E. QUARTER SECTION TOWNSHIP RANGE OR STREET AND NUMBER

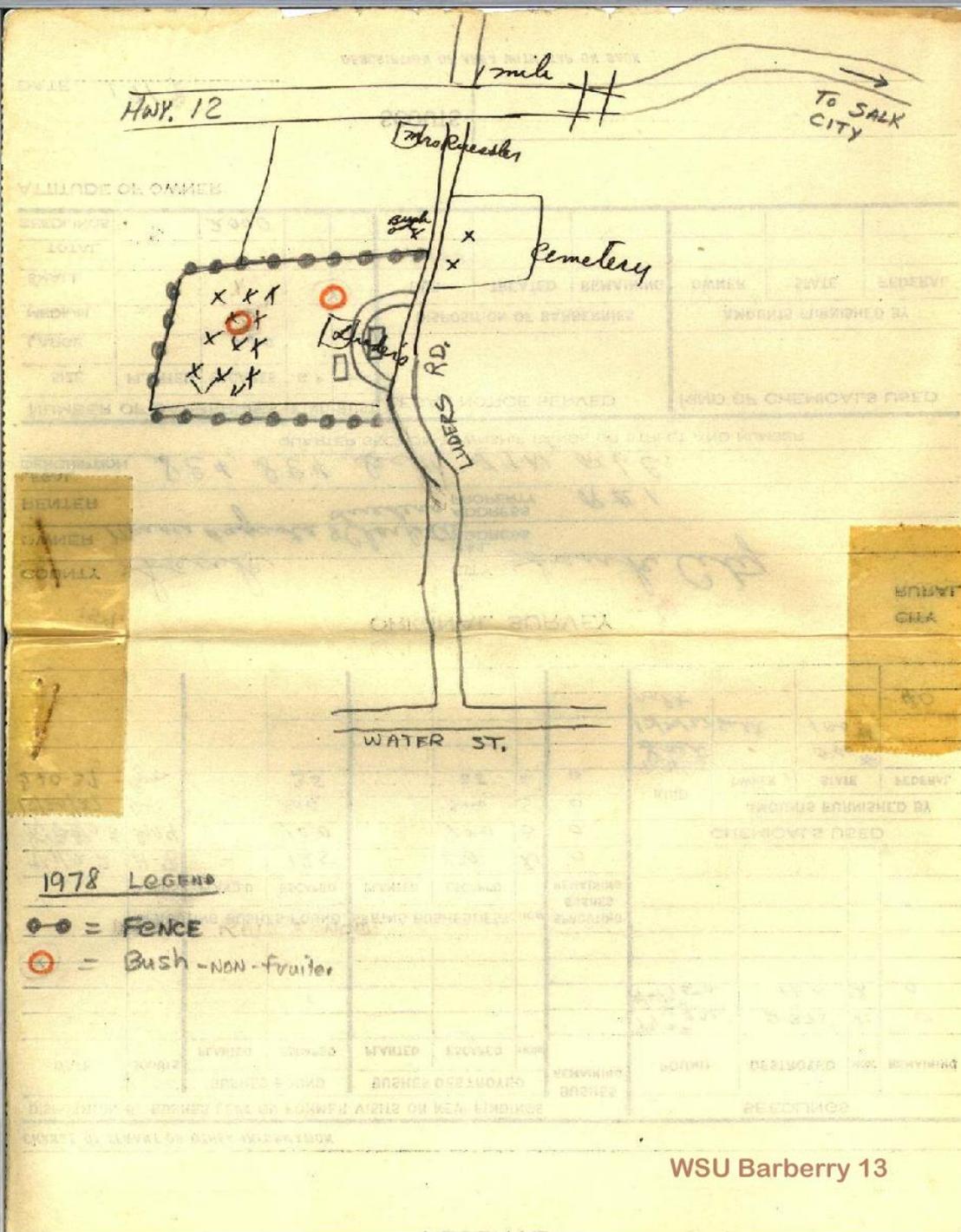
NUMBER OF BARBERRIES				KIND	RUST	LEGAL NOTICE SERVED			KIND OF CHEMICALS USED			
SIZE	PLANTED	ESCAPES	G-P		+	-	DUG	TREATED	REMAINING	OWNER	STATE	FEDERAL
LARGE		100										
MEDIUM												
SMALL												
TOTAL							2100					
SEEDLINGS		2000										

ATTITUDE OF OWNER

SCOUTS {

DATE 1918

DESCRIPTION OF AREA WITH MAP ON BACK



1977 OWNER - Mark Perry and Daniel Ballweg & Darlene Treinen

August Derlath 1941 owner Sank G.

CHANGE OF TENANT OR OTHER INFORMATION

DISPOSITION OF BUSHES LEFT ON FORMER VISITS OR NEW FINDINGS							CHEMICALS, KIND AND AMTS. FURNISHED BY					
DATE	SCOUTS	BUSHES FOUND		BUSHES DESTROYED			BUSHES REMAINING	KIND*	OWNER	STATE	FED. DEP.	C.P.G.R.
		PLANTED	ESCAPED	PLANTED	ESCAPED	HOW*						
5-20-37	Gen		35		35	S	0	S			40	
3/1/41	AC.		1NF		1	NF D						
9-10-46	RD		5-F 6-NF		11	D	0					
1-26-56	G.D.		1F 1NF		2	A				891		
SPROUTING BUSHES FOUND		SPRING. BUSHES DEST.		HOW*	SPROUTING BUSHES REMAINING	SEEDLINGS						
SCOUTS	PLANTED	ESCAPED	PLANTED			ESCAPED	FOUND	DESTROYED	HOW	REMAINING		
11-21-63	DRK		3-NF		3	A						
2-27-78	GK	0	2-NF	0	2	NF A						

Form 1 (7) 49 ORIGINAL SURVEY 5B V RURAL

COUNTY Sank CITY Prairie Du Sac

OWNER Sister Sisters MAIL ADDRESS

RENTER ADDRESS PROPERTY T. 9 N. R. 6 E.

LEGAL DESCRIPTION N.E. 1/4 of S.E. 1/4 of S.C. 4 of Sec. 11 Prairie Du Sac

QUARTER, SECTION, TOWNSHIP, RANGE, OR STREET AND NUMBER

NUMBER OF BARBERRIES			KIND	RUST	LEGAL NOTICE SERVED
SIZE	PLANTED	ESCAPED			
LARGE			G-P	+-	
MEDIUM					
SMALL		18			
TOTAL		18			
SEEDLINGS					

*A - Sodium Arsenite; B - Carbon Disulfide; C - Sodium Dichromate; D - Dug; K - Kerosene; S - Salt; Etc.

ATTITUDE OF OWNER Hange + Steward

SCOUTS

DATE Aug 23, 1932

DESCRIPTION OF AREA WITH MAP ON BACK

SCALE

NORTH POINT

LEGEND

BARBERRY BUSHES X X X

INDICATE LOCATION OF FARMSTEAD AND PERMANENT LANDMARKS

DRAW A GOOD MAP, LOCATING THE BUSHES WITH REFERENCE TO PERMANENT LANDMARKS

WSU Barberry 13-5019

RESURVEY

Stephenson 1977
CHANGE OF TENANT OR OTHER INFORMATION

DISPOSITION OF BUSHES LEFT ON FORMER VISITS OR NEW FINDINGS							CHEMICALS, KIND AND AMTS. FURNISHED BY					
DATE	SCOUTS	BUSHES FOUND		BUSHES DESTROYED			BUSHES REMAINING	KIND*	OWNER	STATE	FED. DEP.	C.P.G.R.
		PLANTED	ESCAPED	PLANTED	ESCAPED	HOW*						
5/9/33	J.K.	0	135	0	135	S	0	S		725*		
11/16/37	G.H.L. D.V.R.D.	0	574	0	574	S	0	S			2215*	
Jan 47	G.D.	0	27	0	27	S	0	S			2000	
Oct. 47	G.D.		10-5		62	A					34	

SPROUTING BUSHES FOUND				SPRNG. BUSHES DEST.			HOW*	SPROUTING BUSHES REMAINING	SEEDLINGS			
SCOUTS	PLANTED	ESCAPED	PLANTED	ESCAPED	HOW*	FOUND			DESTROYED	HOW	REMAINING	
5/9/33	J.K.	0	6	0	6	S	0	26	26	S	0	
11-24-54	G.D.		9-27-NF		46			arsenate	FED. 6			
8-10-60	D-K		5-NF		3			A	80%			

Form I. **SECOND ORIGINAL SURVEY 4891B** CITY RURAL

COUNTY Dane 144 CITY Black Earth wis.

OWNER A. A. Bjelde MAIL ADDRESS Black Earth R.R. 2

RENTER _____ ADDRESS PROPERTY _____

LEGAL DESCRIPTION N. 1/4 of E. 1/4 of Sec. 10 T. 7 N. R. 6 E.
QUARTER, SECTION, TOWNSHIP, RANGE, OR STREET AND NUMBER

NUMBER OF BARBERRIES			KIND	RUST	LEGAL NOTICE SERVED							
SIZE	PLANTED	ESCAPED	G-P	+-	DISPOSITION OF BARBERRIES			CHEMICALS, KIND AND AMTS. FURNISHED BY				
					DUG	TREATED	REMAINING	KIND*	OWNER	STATE	FED. DEP.	C.P.G.R.
LARGE		38	9	+								
MEDIUM		243	2	+								
SMALL		2625	9	+								
TOTAL		2906	9	+		2906	0	S		14200*		
SEEDLINGS		140	9	+		140	0					

*A—Sodium Arsenite; B—Carbon Bisulfide; C—Sodium Dichromate; D—Dug; K—Kerosene; S—Salt; Etc.

ATTITUDE OF OWNER UNCOOPERATIVE 1977 SCOUTS Edith A. Hendrickson, Harold H. Carl

DATE Aug 23, 1977 Richard M. Backus, L. Munk, D. Blackson

DESCRIPTION OF AREA WITH MAP ON BACK

Bushes all over farm.

1937 bushes are on hillsides south and southwest of house.

DATE	SCOUTS	BUSHES FOUND	BUSHES DESTROYED	BUSHES REMAINING	KIND*	OWNER	STATE	FED. DEP.	C.P.G.R.
5/9/33	J.K.	0	135	0	135	S	0	S	725*
11/16/37	G.H.L. D.V.R.D.	0	574	0	574	S	0	S	2215*
Jan 47	G.D.	0	27	0	27	S	0	S	2000
Oct. 47	G.D.		10-5		62	A			34

Form I. **SECOND ORIGINAL SURVEY 4891B** CITY RURAL

COUNTY Dane 144 CITY Black Earth wis.

OWNER A. A. Bjelde MAIL ADDRESS Black Earth R.R. 2

RENTER _____ ADDRESS PROPERTY _____

LEGAL DESCRIPTION N. 1/4 of E. 1/4 of Sec. 10 T. 7 N. R. 6 E.
QUARTER, SECTION, TOWNSHIP, RANGE, OR STREET AND NUMBER

NUMBER OF BARBERRIES			KIND	RUST	LEGAL NOTICE SERVED							
SIZE	PLANTED	ESCAPED	G-P	+-	DISPOSITION OF BARBERRIES			CHEMICALS, KIND AND AMTS. FURNISHED BY				
					DUG	TREATED	REMAINING	KIND*	OWNER	STATE	FED. DEP.	C.P.G.R.
LARGE		38	9	+								
MEDIUM		243	2	+								
SMALL		2625	9	+								
TOTAL		2906	9	+		2906	0	S		14200*		
SEEDLINGS		140	9	+		140	0					

*A—Sodium Arsenite; B—Carbon Bisulfide; C—Sodium Dichromate; D—Dug; K—Kerosene; S—Salt; Etc.

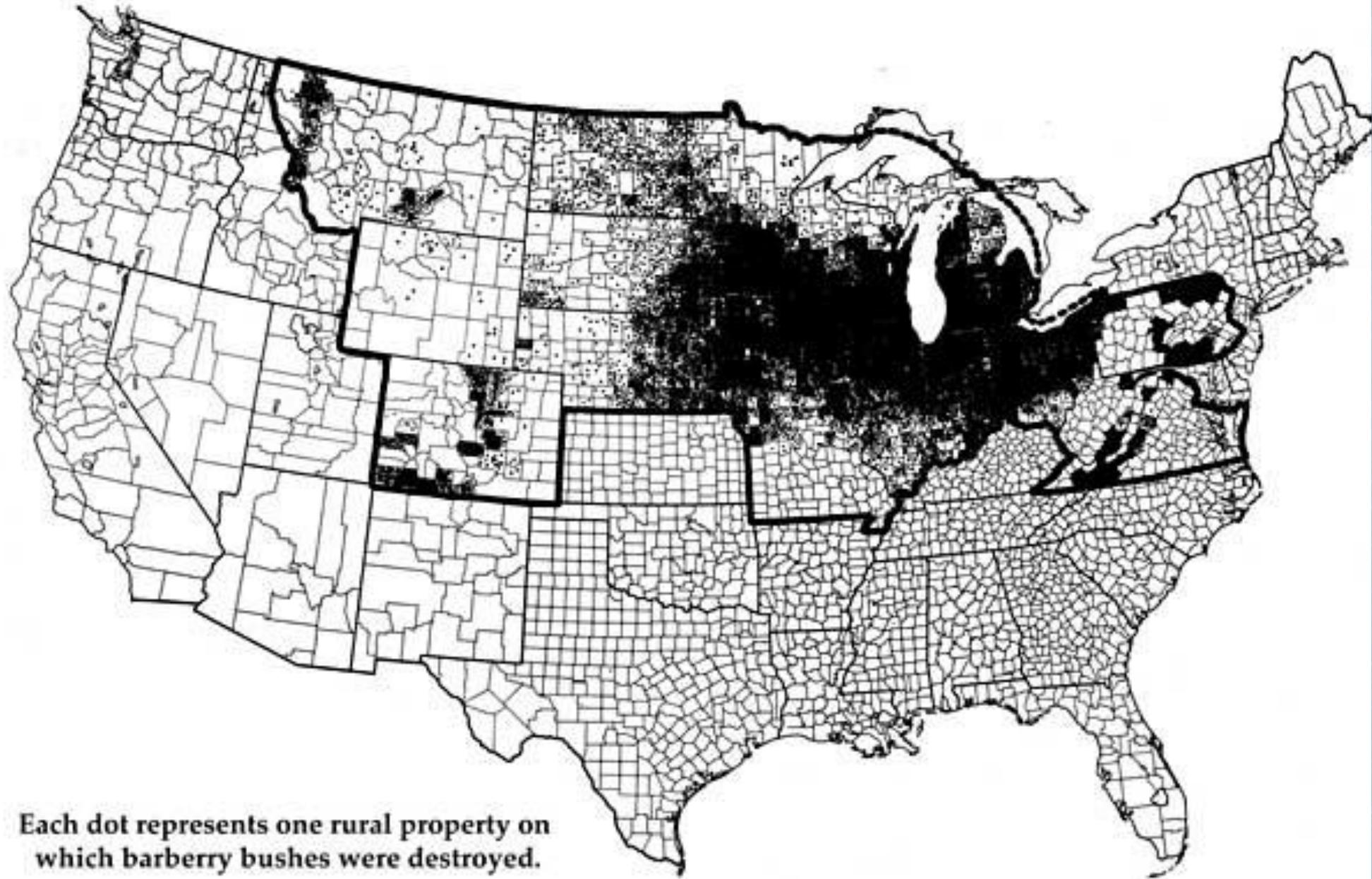
ATTITUDE OF OWNER UNCOOPERATIVE 1977 SCOUTS Edith A. Hendrickson, Harold H. Carl

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DESCRIPTION OF AREA WITH MAP ON BACK

WSU Barberry 13

States Cooperating in the Barberry Eradication Program



Each dot represents one rural property on which barberry bushes were destroyed.

Is common barberry still a concern?

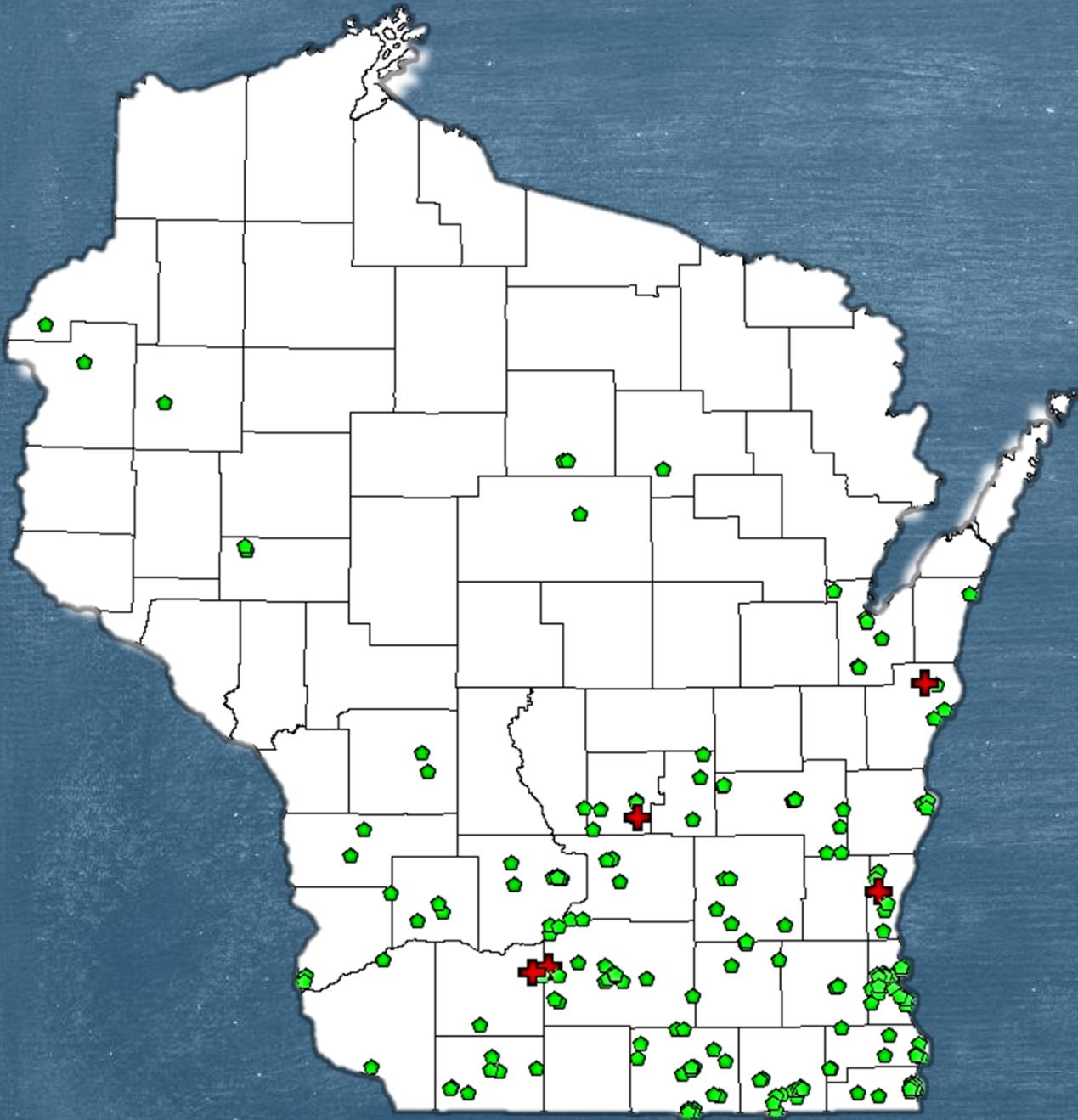
UG99, a new, particularly virulent race of stem rust was found in North Africa in 1999.

A similar new race could arise here, or UG99 could (and probably will) reach the U. S.

After all those years (and all that salt),
how'd they do?

DATCP resurvey work 2009-2014

Random sample of Form L locations



192 sites with no barberry found

5 sites with common barberry present

Bushes at all five sites **do** have rust every year

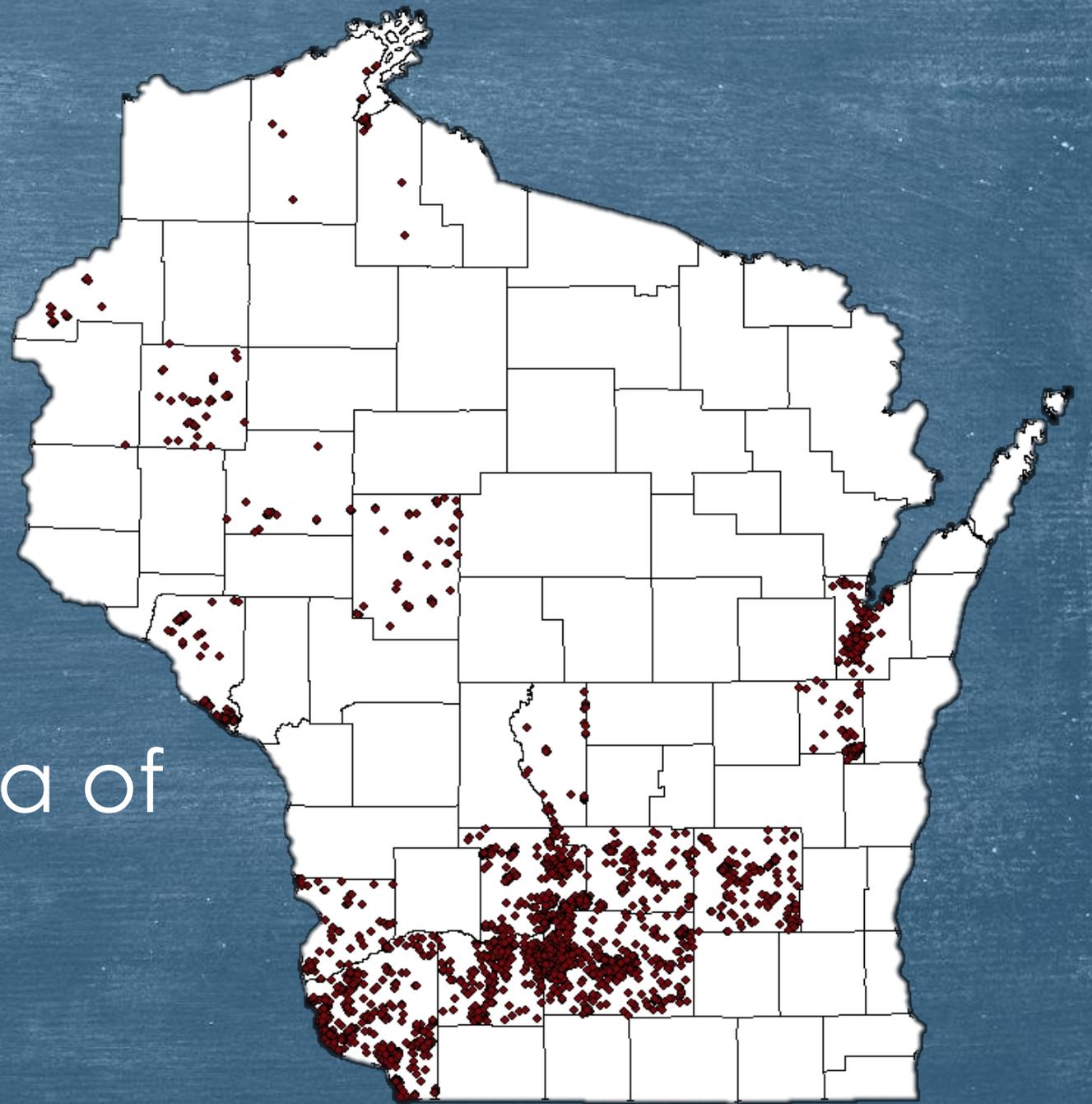
Collections sent to USDA Cereal Disease Laboratory for analysis

Washington State University/APHIS-CPHST
**Developing and Serving a Database of
Historical Barberry Survey Data**

- ▶ Farm-Bill funded program to collect, image, geocode and georectify all the remaining records from the USDA Barberry Eradication Program.
- ▶ Started on Wisconsin records in 2013.
- ▶ Returned digitized images in August 2014.
- ▶ **Returned a shapefile of locations in 17 counties in Nov. 2014**, the rest are still in progress.

3,584 locations

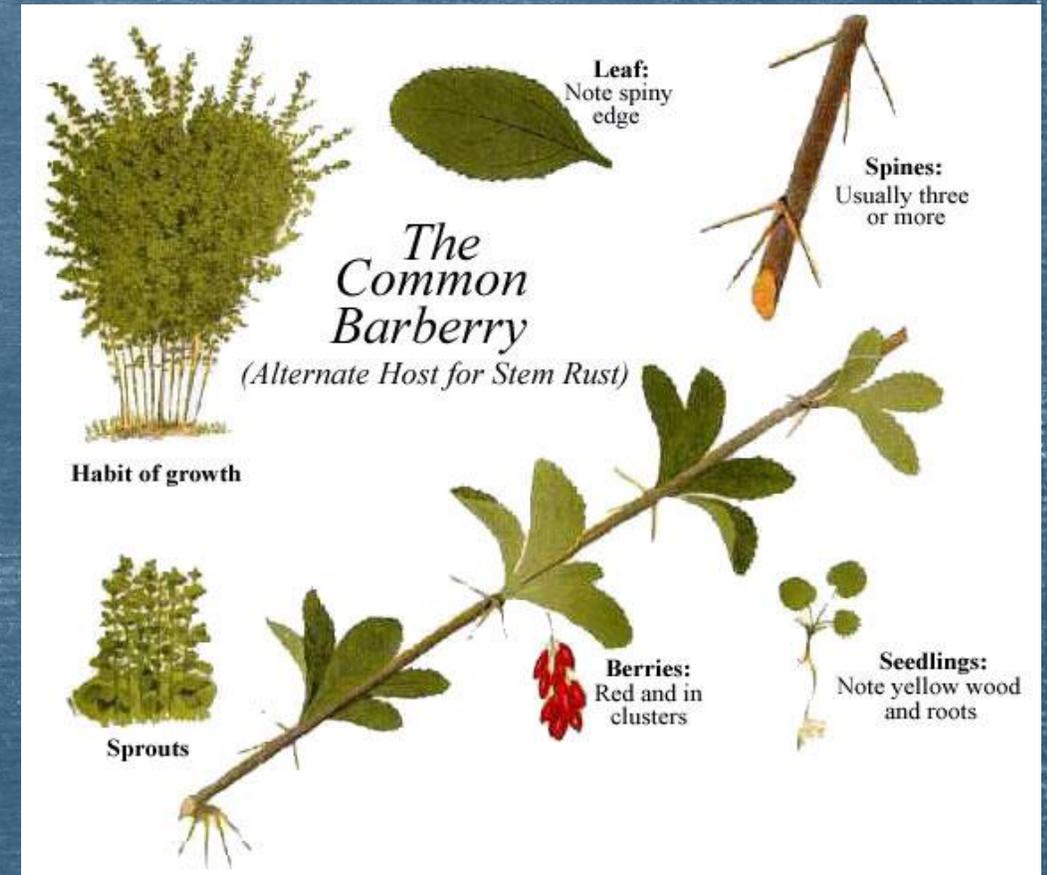
Includes Form L data of
counts, number of
resurvey visits



New possibilities for an old survey

Prioritize barberry survey based upon:

- number of resurvey visits required
- number of bushes originally found
- density per township?





**Use data to target wheat stem rust survey
Proximity to historically high barberry counts**

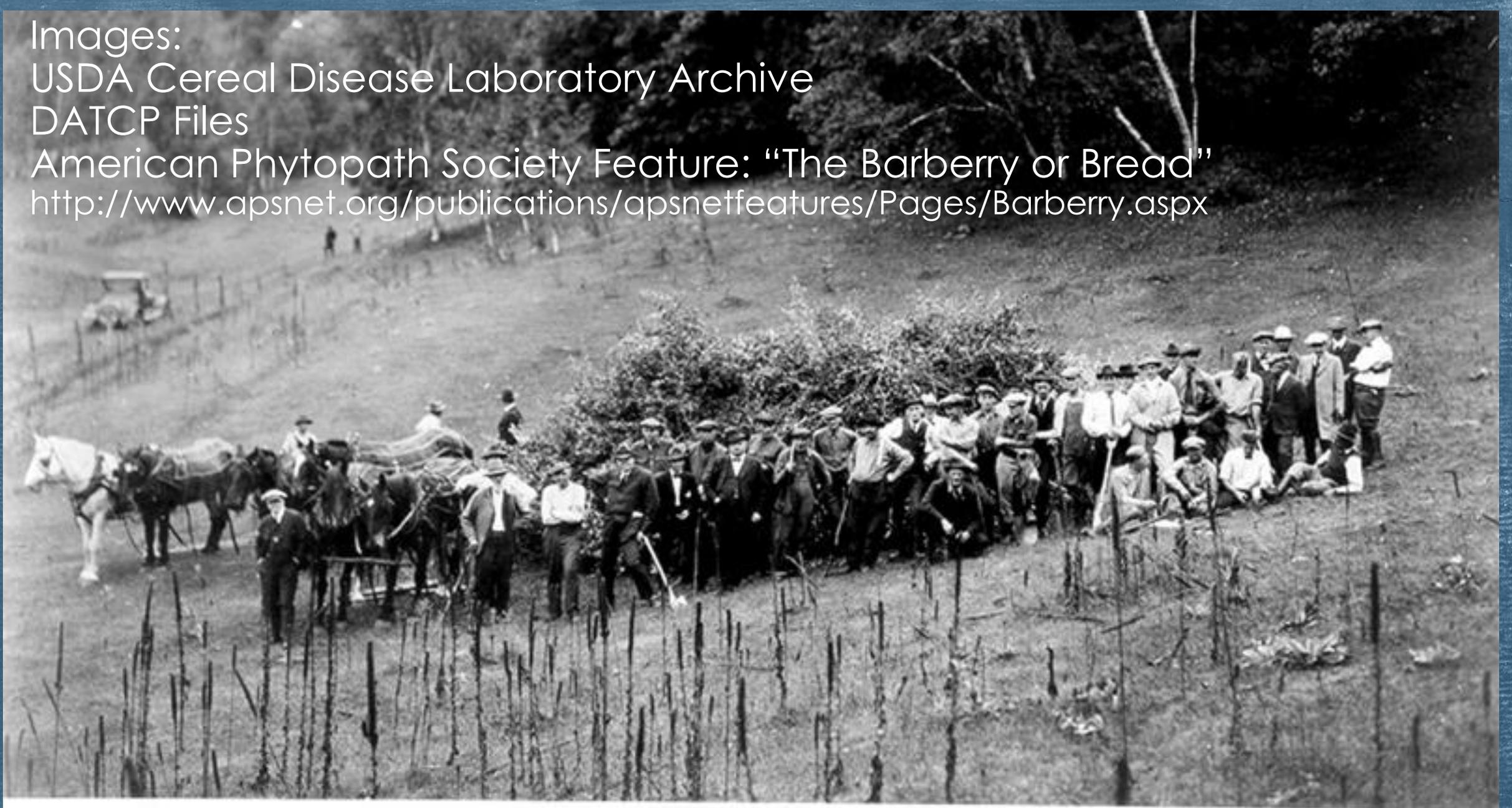
Images:

USDA Cereal Disease Laboratory Archive

DATCP Files

American Phytopath Society Feature: "The Barberry or Bread"

<http://www.apsnet.org/publications/apsnetfeatures/Pages/Barberry.aspx>



BARBERRY BEE, RED WING, MINNESOTA, SEPTEMBER 20, 1922