NPS Form 10-900-a
(8-86)

OMB Approval No. 1024-0018

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 91001474 **Date Listed: 10/8/91**

Research Plot 2 | Cass | ND
Property Name | **County** | **State**

Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Beth Boland — 10/8/91
Signature of the Keeper **Date of Action**

==========

Amended Items in Nomination:

Section #8, Significance:

The criterion B box was checked by mistake; there is no significant person listed, and the text does not claim significance under Criterion B. As documented, Research Plot 2 meets National Register Criterion A only.

This information was confirmed with Lauren McCrosky of the ND SHPO staff.

DISTRIBUTION:
National Register property file
Nominating Authority (without nomination attachment)

NPS Form 10-900
(Rev. 8-86)

OMB No. 1024-0018 1474

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

RECEIVED
NATIONAL REGISTER

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name: Agricultural Research Site
Research Plot 2
other names/site number:

2. Location

street & number: Campus - North Dakota State University (see attached legal description) NA ☐ not for publication
city, town: Fargo NA ☐ vicinity
state: North Dakota code: ND county: Cass code: 017 zip code: 58105

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
		Contributing	Noncontributing NA
☐ private	☐ building(s)		buildings
☐ public-local	☐ district		sites
☒ public-State	☒ site	1	structures
☐ public-Federal	☐ structure		objects
	☐ object		Total
		1	

Name of related multiple property listing: NA

Number of contributing resources previously listed in the National Register NA

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this ☒ nomination ☐ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property ☒ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

James E. Sperry — August 14, 1991

Signature of certifying official: James E. Sperry State Historic Preservation Officer (North Dakota) — Date

State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of commenting or other official — Date

State or Federal agency and bureau

5. National Park Service Certification

I, hereby, certify that this property is:

☑ entered in the National Register. ☐ See continuation sheet. — Patt Boland — 10/8/91

☐ determined eligible for the National Register. ☐ See continuation sheet.

☐ determined not eligible for the National Register.

☐ removed from the National Register.

☐ other, (explain:) _____

Signature of the Keeper — Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)

Education - research facility

Agricultural/Subsistence - agricultural field

Current Functions (enter categories from instructions)

Education - research facility

Agricultural/Subsistence - agricultural field

7. Description

Architectural Classification (enter categories from instructions)

NA

Materials (enter categories from instructions)

foundation NA

walls NA

roof NA

other NA

Describe present and historic physical appearance.

See continuation sheet.

[X] See continuation sheet

The nominated property is a rectangular plot oriented north-south and measuring 116 feet by 94.10 feet. The plot comprises one third of an acre (the east and west portions which remain from what was originally a one acre plot). Plot 2 was reduced after 1893 to a one third acre plot until 1911 when the plot was further divided into two one-sixth acre plots designated as Plot 2 east and Plot 2 west. Both portions of the since-reduced plot were actively enrolled in wheat cropping experimentation during the period of significance. The field is bordered by roads on two sides and research plots on the remaining sides. The context of the plot has not changed since it was established. No neighboring structures or features intrude on its setting and it is still surrounded by farm land similar to the surrounding area.

The plot's soil has the same general properties of soil in the surrounding Red River Valley. The retreating glacier which created the Valley left in its wake, a large lake known as Lake Agassiz, since reduced to the meandering Red River which flows north to Lake Winnipeg in Canada. As a result of this glacial history, the soils of the Valley are rich, finely textured sediments which were deposited as a lake bed.

Because of the desire for controlled and reliable data (as is true of any scientific experiment) there was been no introduction of other soils, chemicals or fertilizers into this plot which would have altered or diminished the plot's high concentration of pathogens. Therefore, the plot has remained "pure" as a laboratory which duplicates the regional soil environment in which wheat is cultivated.

Research plot 2 is still being cropped continuously to wheat. The field is cultivated in the fall and then sown to spring and durum wheat early each spring. The plant genotypes are evaluated for root disease resistance each fall and the data recorded.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

☐ nationally ☒ statewide ☒ locally

Applicable National Register Criteria ☒ A ☒ B ☐ C ☐ D

Criteria Considerations (Exceptions) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G NA

Areas of Significance (enter categories from instructions)	Period of Significance	Significant Dates
Agriculture	1882 - 1916	1882
		1892
Invention		1911
		1916

Cultural Affiliation

NA

Significant Person

NA

Architect/Builder

NA

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

See continuation sheet.

☒ See continuation sheet

Agricultural Research Plot 2 is nominated under Criterion A for its role in agricultural history as the scene of significant discoveries about the effects of continuous cropping and root rot in wheat cultivation that had widespread implications for the raising of this cereal crop. As one of oldest continuously cultivated wheat plots in North America, the plot is ripe with soil pathogens to which resistant varieties of wheat may be subjected and tested for resistance. Because this considerable age has given the plot an unusual density of pathogens which is highly useful for experimentation, the plot's scientific value is derived in part from its status as North America's oldest continuously used plot.

Only Plot 2 and one other, non-contiguous plot at the North Dakota State University Experiment Station are nominated to the National Register. Because of its relative isolation from the other plot, Plot 2 does not lend itself to district designation and is nominated separately. Remaining plots at the Station do not appear to be eligible and would not constitute a viable district.

Plot 2 is regularly cited in agricultural literature as one of the oldest continuous wheat plots in North America (2). The field has been in continuous wheat since 1882 and has been used as a research plot since 1892, shortly after the experiment station was established. The research undertaken in Plot 2 took place in a context of nationally sanctioned agricultural research. The Hatch Act, which was passed in 1887, provided annual appropriations which would establish and maintain an agricultural experiment station in connection with this land grant college. Article XIX of the North Dakota State Constitution, adopted in 1889, established the agricultural college at Fargo. The first legislative assembly in 1890 established the agricultural experiment stations. The initiation of agricultural research began shortly after the establishment of the station.

In the spring of 1892, Willet M. Hays laid out a set of crop rotation trials on the NE quarter of the SE quarter of Section 36, Township 140 N, Range 49 W in Cass County, North Dakota on what had become the North Dakota Agricultural farm. Included in the set of plots, for the purpose of comparison, was Plot No. 2 which was to be devoted to continuous wheat culture. J.H. Shepperd and R.C. Doneghue in 1912 stated: "This plot has been seeded to wheat every year since 1882, according to verbal statement made to Hays and Shepperd respectively by James Holes and George Osgood of Fargo, North Dakota, who had known the land from the first settlement of the country." (5)

One of the oldest recommendations for any type of successful agriculture is to include crop rotation. The rotation of crops on a field prevents the buildup of disease and insect populations which are harmful to the crop. The reverse happens when a field is

exposed to monoculture or the continuous growing of an identical crop. Because of considerable age, and the monoculture (single cropping) that has been imposed on Plot 2, a very high level of soil pathogens, especially root rot, have evolved. The soil in Plot 2 contains a high level of common root rot which developed because of this continual cropping system. This makes it an ideal environment to identify those genotypes that are disease resistant.

The pathogenic condition of Plot 2 decreed that it would play a central role in the wheat research program of the experiment station. It was on the basis of his observation on Plot 2 that Henry L. Bolley developed his controversial theory, first publicized in 1911, that such wheat conditions such as sun scald and tip burn resulted from the presence of parasitic micro-organisms in the soil introduced by the wheat plant itself. When systematic wheat breeding was initiated at the station under Lawrence Root Waldron in 1916, Plot 2 began its long career as a plot for determining varietal resistance to root rot and other parasitic wheat disease. (3,4)

The plot is still used to screen root lines for root rot resistance (1). This method, as indicated previously involves planting a large number of genotypes and evaluating their resistance to root rot. The current project leader involved in doing this research is Dr. Robert Stack of the NDSU Plant Pathology Department. The information obtained is of value to and is provided to plant breeders who develop hard red spring and durum wheat varieties for the Northern Great Plains.

The centrality of wheat to the history of North Dakota and the rest of the Northern Plains, the crucial importance of this research plot to the University's wheat program, and the significance of this site to the work of such world-renowned scientists as Henry Bolley and L.R. Waldron make Plot 2 worthy of recognition and preservation. The plot's early success in verifying the merits of rotation versus continuous cropping, and the specific discoveries about sun scald and tip burn as caused by parasitic organisms distinguish the plot. The plot's old age and resulting pathogenic condition as a plot with the highest levels of common root rot in the state enabled these important discoveries and analyses.

CITATIONS

1. El-Nashaar, H.M. and R.W. Stack. (1989) "The Effect of long-term continuous cropping of spring wheat on aggressiveness of Cohcliobolus sativus." Canadian Journal of Plant Science. pp. 7-14.

2. Shipton, P.J. (1987) "Monoculture and soilborne plant pathogens." Phytopathology Annual Review. pp. 19.

3. Reid, Bill G. (1989) "Five for the Land and Its People." (booklet). pp. 3-10.

4. Danbom, David B. (1990) "Our Purpose is to Serve:" The First Century of the North Dakota Agricultural Experiment Station. North Dakota State University, Fargo. pp. 27-48.

5. Walster, H.L. and T.E. Stoa. (1942) "Continuous wheat culture versus roation wheat culture." North Dakota Agricultural Experiment Station Bimonthly Bulletin 5(1) pp. 2-8.

9. Major Bibliographical References

See continuation sheet.

☒ See continuation sheet

Previous documentation on file (NPS): NA

- ☐ preliminary determination of individual listing (36 CFR 67) has been requested
- ☐ previously listed in the National Register
- ☐ previously determined eligible by the National Register
- ☐ designated a National Historic Landmark
- ☐ recorded by Historic American Buildings Survey # _____
- ☐ recorded by Historic American Engineering Record # _____

Primary location of additional data: NA

- ☐ State historic preservation office
- ☐ Other State agency
- ☐ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other

Specify repository: _____

10. Geographical Data

Acreage of property less than one acre.

UTM References

	Zone	Easting	Northing
A	14	666920	5195540
B	14	666920	5195500
C	14	666960	5195540
D	14	666960	5195500

☐ See continuation sheet

Verbal Boundary Description

See continuation sheet.

☒ See continuation sheet

Boundary Justification

Boundary is drawn by the legal location as described in the Surveyor's Certificate (above).

☒ See continuation sheet

11. Form Prepared By

name/title Dr. A. A. Schneiter, Professor of Agronomy
organization North Dakota State University date August 14, 1991
street & number Crop and Weed Sciences Department telephone (701)237-8895
city or town Fargo state North Dakota zip code 58105

Danbom, David B.
1990 "Our Purpose is to Serve:" The First Century of the North Dakota Agricultural Experiment Station. Fargo: North Dakota State University.

El-Nashaar, H.M. and R.W. Stack
1989 "Effect of long-range continuous cropping of spring wheat on aggressiveness of Cochliobolus sativus." Canadian Journal of Plant Science.

Reid, Bill G.
1989 "Five for the Land and Its People" (booklet)

Shipton, P.J.
1977 "Monoculture and soilborne plant pathogens." Phytopathology Annual Review.

Walster, H.L. and T.E. Stoa
1942 "Continuous wheat culture versus rotation wheat culture." North Dakota Agriculture Experiment Station Bimonthly Bulletin 5 (1).

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National Register of Historic Places Continuation Sheet

Section number 10 Page 1

From the Southeast corner of Section 36, Township 140 North, Range 49 West bear North 90°-00'-00" West along the South Line of said Section 36 for a distance of 2817.49 feet; thence bear North 00°-00-00" East for a distance of 1361.53 feet to the Point of Beginning of the tract of land herein described; thence North 89°-52'-47" West for a distance of 94.10 feet; thence North 00°-07'-13" East for a distance of 116.00 feet thence South 89°-52'-47" East for a distance of 94.10 feet; thence South 00°-07'-13 West for a distance of 116.00 feet, more or less, to the Point of Beginning.