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

OMB No. 1024-0018

1475

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

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 Agricultural Research Site
historic name Research Plot 30
other names/site number

2. Location (See attached legal description)
street & number Campus - North Dakota State University NA ☐ not for publication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

Signature of certifying official James E. Sperry, State Historic Preservation Officer (North Dakota) Date August 14, 1991

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. — Beth 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 - agriculture field

Current Functions (enter categories from instructions)

Education - research facility
Agricultural/Substence - agriculture 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

9. Major Bibliographical References

See continuation sheet.

[X] 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:

- [X] State historic preservation office
- [ ] Other State agency
- [ ] Federal agency
- [ ] Local government
- [ ] University
- [ ] Other

Specify repository: _____

10. Geographical Data

Acreage of property 1.01 acres

UTM References

	Zone	Easting	Northing
A	14	666700	5195540
B	14	666700	5195000
C	14	666820	5195540
D	14	666820	5195000

[ ] See continuation sheet

Verbal Boundary Description

See continuation sheet.

[X] See continuation sheet

Boundary Justification

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

[X] See continuation sheet

11. Form Prepared By

name/title Dr. A.A. Schneiter, Professor of Agronomy
organization Dept. of Crop and Weed Sciences date August 13, 1991
street & number North Dakota State University telephone (701)237-8895
city or town Fargo state North Dakota zip code 58105

8. Statement of Significance

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

[X] nationally [X] statewide [X] locally

Applicable National Register Criteria [X] A [X] 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	1894-1925	1894
		1908
Invention		1925

Cultural Affiliation: NA

Significant Person: Henry L. Bolley

Architect/Builder: NA

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

See continuation sheet.

[X] See continuation sheet

The nominated property is a rectangular plot oriented east-west and measuring 400 feet by 110 feet. The field is located west and north of the intersection of Centennial Avenue (NDSU Campus) and 18th St. N. on the main experiment station research plots at Fargo. A small drainage ditch runs through the plots from north to south. The context of the plot has not changed since it was established. No neigboring 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 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 no introduction of other soils, chemicals or fertilizers into this plot which would have impaired efforts to identify the flax pathogen. Therefore, the plot has remained "pure" as a laboratory which duplicates the regional soil environment in which flax wilt may occur.

Research plot 30 has been cropped continuously to flax for nearly a century. The field is cultivated each fall and then sown to flax early in the spring. Evaluations of the disease of the various flax genotypes are made and recorded during the summer.

Agricultural Research Plot 30 is nominated under Criterion A for its national importance in the history of agricultural experimentation relating to the identification of a pathogen which plagued flax production and the industry. The Plot also satisfies the intent of Criterion B in that it is the property for which well known agricultural scientist Henry L. Bolley achieved international acclaim. Only Plot 30 and one other, non-continguous 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 30 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.

Flax was a profitable crop a century ago. The fibers of the plant were used to make linen, and oil derived from the flax seed was an important component in the manufacture of a number of items, especially paint and floor coverings. Flax was an attractive crop in early North Dakota, both because it was appropriate for the region and because it held the potential for reducing the state's overwhelming dependence on wheat. The problem with flax was that, while it would thrive for a few years in a field, the soil would soon become "flax sick," the crop would suffer from "flax wilt," and the yields would decline precipitiously. The problem of flax wilt was a daunting one. A number of theories regarding the cause of flax wilt existed, the most popular of which was that flax depleted some essential but unknown nutrient from the soil (3,4,5).

The experimentation which led to the successful identification of the flax pathogen (Linum usitatissimum L.) took place in a context of nationally sanctioned agricultural research. The Hatch Act, which passed in 1887, provided annual appropriations which would establish and maintain an agricultural experiment station in conjunction with the land grant colleges. 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 station. The initiation of agricultural research began shortly after the establishment of the station.

In 1894, Professor Henry, L. Bolley of the North Dakota Agricultural College first planted flax on Plot No. 30 of the experiment station research plot at Fargo. The original objective was to plant flax continuously on the piece of ground until a flax sick soil condition could be achieved (6). By July 1900, all plants growing on Plot 30 were dead or rapidly wilting. H.L. Bolley, whose name became synonymous with flax research, concluded from observation of wilted plants and from chemical analysis of the soil, that flax wilt was caused by a parasite fungus introduced in the soil by the flax plant itself. Using Plot 30, Bolley identified the causal organism of flax wilt to be Fusarium lini and in 1903, reported the discovery of some resistent plants (1).

Bolley's work in this plot yielded a number of significant discoveries. By 1908, he had developed and released the first wild resistant flax variety - "NDR (North Dakota Resistant) No. 52." This name was selected because this resistant genotype was found in row 52 Plot of 30 (2). In subsequent years additional lines were developed in this plot by succeeding N.D.S.U. crop scientistis until by 1925, the genotype "Bison" was evolved, becoming one of the most widely grown varieties in the world. Since then, utilization of Plot 30 has continued and genotypes with much greater levels of resistance than the older types have been selected (3).

Bolley was distinguished among his contemporaries by his specific discoveries regarding flax wilt. While the remainder of his career was productive and highly regarded by the scientific community, it was the flax wilt connection that earned him the greatest recognition.

Plot 30 is still in use today and is used to evaluate flax genotypes or resistance to flax wilt. In the U.S., flax continues to be a major source of drying oil for paint. In other parts of the world it is of equal or greater importance as a source of fiber. Plot 30 is the oldest flax research lot in the U.S. and probably the world. This research plot is often cited with disease work involving flax. The results of Bolley's discovery were welcomed by flax growers all over the world (2). Plot 30 continues today to provide beneficial information for the world flax industry.

The significance of Plot 30 to the discovery of the cause of flax wilt and to the advancement of flax production in North Dakota and the world, and it's association with renowned crop scientist H.L. Bolley make it worthy of designation and preservation.

CITATIONS

1. Bolley, H.L. (1903). "Flax and flax seed selection." Bulletin 55, North Dakota Agriculture Experiment Station. p. 193.

2. Eastman, W. (1968). The History of the Linseed Oil Industry in the United States. T.S. Deneson and Company, Minneapolis, MN. pp. 18-23.

3. Thompson, T.E., and D.E. Zimmerman,(1975). "Plot 30, Proving ground for wilt resistant flax varieties." North Dakota Farm Research. Vol. 37. No. 6 pp. 29-30.

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

5. 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.

6. Walster, H.L. (1950). "Bolley's conquest of flax wilt." North Dakota Farm Research. Vol. 12. No. 6 pp. 187-197.

Bolley, H.L.
1903 "Flax and flax seed selection." Bulletin 55, North Dakota Agricultural Experiment Station.

Danbom, David B.
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Eastman, W.
1968 The History of the Linseed Oil Industry in the United States. Minneapolis: T.S. Deneson and Company, Minneapolis.

Reid, Bill G.
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Thompson, T.E., and D.E. Zimmerman
1975 "Plot 30, Providing ground for wilt resistant flax varieties." North Dakota Farm Research. Vol. 37, No. 6.

Walster, H.L.
1950 "Bolley's conquest of flax wilt." North Dakota Farm Research. Vol. 12. No. 6.

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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 3173.60 feet; thence bear North 00°-00'-00" East for a distance of 1362.28 feet to the Point of Beginning of the tract of land herein described; thence North 89°-52'-47" West for a distance of 400.00 feet; thence North 00°-07'-13" East for a distance of 110.00 feet; thence South 89°-52'-47" East for a distance of 400.00 feet; thence South 00°-07'-13" West for a distance of 110.00 feet, more or less, to the Point of Beginning.