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Statement of Program Service Accomplishments

Check if Schedule O contains a response or note to any line in this Part III ☐

Check if Schedule O contains a response or note to any line in this Part III ☒

COORDINATE SOYBEAN RESEARCH

If "Yes," describe these new services on Schedule O

If "Yes," describe these changes on Schedule O

4 Describe the organization's program service accomplishments for each of its three largest program services, as measured by expenses. Section 501(c)(3) and 501(c)(4) organizations are required to report the amount of grants and allocations to others, the total expenses, and revenue, if any, for each program service reported.

4a	(Code)	(Expenses \$ 3,136,852 including grants of \$)	(Revenue \$)
SEE ATTACHED STATEMENT OF PROGRAM SERVICES			

4b (Code) (Expenses \$ including grants of \$) (Revenue \$)

4c (Code) (Expenses \$ including grants of \$) (Revenue \$)

4d Other program services (Describe in Schedule O)
(Expenses \$ _____ including grants of \$ _____) (Revenue \$ _____)

4e	Total program service expenses	3,136,852
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Part IV

Checklist of Required Schedules

	Yes	No
1 Is the organization described in section 501(c)(3) or 4947(a)(1) (other than a private foundation)? <i>If "Yes," complete Schedule A.</i>	Yes	
2 Is the organization required to complete <i>Schedule B, Schedule of Contributors</i> (see instructions)?		No
3 Did the organization engage in direct or indirect political campaign activities on behalf of or in opposition to candidates for public office? <i>If "Yes," complete Schedule C, Part I</i>		No
4 Section 501(c)(3) organizations. Did the organization engage in lobbying activities, or have a section 501(h) election in effect during the tax year? <i>If "Yes," complete Schedule C, Part II</i>		No
5 Is the organization a section 501(c)(4), 501(c)(5), or 501(c)(6) organization that receives membership dues, assessments, or similar amounts as defined in Revenue Procedure 98-19? <i>If "Yes," complete Schedule C, Part III</i>		No
6 Did the organization maintain any donor advised funds or any similar funds or accounts for which donors have the right to provide advice on the distribution or investment of amounts in such funds or accounts? <i>If "Yes," complete Schedule D, Part I</i>		No
7 Did the organization receive or hold a conservation easement, including easements to preserve open space, the environment, historic land areas, or historic structures? <i>If "Yes," complete Schedule D, Part II</i>		No
8 Did the organization maintain collections of works of art, historical treasures, or other similar assets? <i>If "Yes," complete Schedule D, Part III</i>		No
9 Did the organization report an amount in Part X, line 21 for escrow or custodial account liability, serve as a custodian for amounts not listed in Part X, or provide credit counseling, debt management, credit repair, or debt negotiation services? <i>If "Yes," complete Schedule D, Part IV</i>		No
10 Did the organization, directly or through a related organization, hold assets in temporarily restricted endowments, permanent endowments, or quasi-endowments? <i>If "Yes," complete Schedule D, Part V</i>		No
11 If the organization's answer to any of the following questions is "Yes," then complete Schedule D, Parts VI, VII, VIII, IX, or X as applicable		
a Did the organization report an amount for land, buildings, and equipment in Part X, line 10? <i>If "Yes," complete Schedule D, Part VI.</i>		No
b Did the organization report an amount for investments—other securities in Part X, line 12 that is 5% or more of its total assets reported in Part X, line 16? <i>If "Yes," complete Schedule D, Part VII</i>		No
c Did the organization report an amount for investments—program related in Part X, line 13 that is 5% or more of its total assets reported in Part X, line 16? <i>If "Yes," complete Schedule D, Part VIII</i>		No
d Did the organization report an amount for other assets in Part X, line 15 that is 5% or more of its total assets reported in Part X, line 16? <i>If "Yes," complete Schedule D, Part IX</i>		No
e Did the organization report an amount for other liabilities in Part X, line 25? <i>If "Yes," complete Schedule D, Part X</i>		No
f Did the organization's separate or consolidated financial statements for the tax year include a footnote that addresses the organization's liability for uncertain tax positions under FIN 48 (ASC 740)? <i>If "Yes," complete Schedule D, Part X</i>		No
12a Did the organization obtain separate, independent audited financial statements for the tax year? <i>If "Yes," complete Schedule D, Parts XI and XII</i>		No
b Was the organization included in consolidated, independent audited financial statements for the tax year? <i>If "Yes," and if the organization answered "No" to line 12a, then completing Schedule D, Parts XI and XII is optional</i>		No
13 Is the organization a school described in section 170(b)(1)(A)(ii)? <i>If "Yes," complete Schedule E</i>		No
14a Did the organization maintain an office, employees, or agents outside of the United States?		No
b Did the organization have aggregate revenues or expenses of more than \$10,000 from grantmaking, fundraising, business, investment, and program service activities outside the United States, or aggregate foreign investments valued at \$100,000 or more? <i>If "Yes," complete Schedule F, Parts I and IV</i>		No
15 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of grants or other assistance to or for any foreign organization? <i>If "Yes," complete Schedule F, Parts II and IV</i>		No
16 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of aggregate grants or other assistance to or for foreign individuals? <i>If "Yes," complete Schedule F, Parts III and IV</i>		No
17 Did the organization report a total of more than \$15,000 of expenses for professional fundraising services on Part IX, column (A), lines 6 and 11e? <i>If "Yes," complete Schedule G, Part I (see instructions)</i>		No
18 Did the organization report more than \$15,000 total of fundraising event gross income and contributions on Part VIII, lines 1c and 8a? <i>If "Yes," complete Schedule G, Part II</i>		No
19 Did the organization report more than \$15,000 of gross income from gaming activities on Part VIII, line 9a? <i>If "Yes," complete Schedule G, Part III</i>		No
20a Did the organization operate one or more hospital facilities? <i>If "Yes," complete Schedule H</i>		No
b If "Yes" to line 20a, did the organization attach a copy of its audited financial statements to this return?		

Part IV

Checklist of Required Schedules (continued)

21	Did the organization report more than \$5,000 of grants or other assistance to any domestic organization or government on Part IX, column (A), line 1? <i>If "Yes," complete Schedule I, Parts I and II</i>	21		No
22	Did the organization report more than \$5,000 of grants or other assistance to individuals in the United States on Part IX, column (A), line 2? <i>If "Yes," complete Schedule I, Parts I and III</i>	22		No
23	Did the organization answer "Yes" to Part VII, Section A, line 3, 4, or 5 about compensation of the organization's current and former officers, directors, trustees, key employees, and highest compensated employees? <i>If "Yes," complete Schedule J</i>	23		No
24a	Did the organization have a tax-exempt bond issue with an outstanding principal amount of more than \$100,000 as of the last day of the year, that was issued after December 31, 2002? <i>If "Yes," answer lines 24b through 24d and complete Schedule K. If "No," go to line 25a</i>	24a		No
b	Did the organization invest any proceeds of tax-exempt bonds beyond a temporary period exception?	24b		No
c	Did the organization maintain an escrow account other than a refunding escrow at any time during the year to defease any tax-exempt bonds?	24c		No
d	Did the organization act as an "on behalf of" issuer for bonds outstanding at any time during the year?	24d		No
25a	Section 501(c)(3) and 501(c)(4) organizations. Did the organization engage in an excess benefit transaction with a disqualified person during the year? <i>If "Yes," complete Schedule L, Part I</i>	25a		No
b	Is the organization aware that it engaged in an excess benefit transaction with a disqualified person in a prior year, and that the transaction has not been reported on any of the organization's prior Forms 990 or 990-EZ? <i>If "Yes," complete Schedule L, Part I</i>	25b		No
26	Did the organization report any amount on Part X, line 5, 6, or 22 for receivables from or payables to any current or former officers, directors, trustees, key employees, highest compensated employees, or disqualified persons? <i>If so, complete Schedule L, Part II</i>	26		No
27	Did the organization provide a grant or other assistance to an officer, director, trustee, key employee, substantial contributor or employee thereof, a grant selection committee member, or to a 35% controlled entity or family member of any of these persons? <i>If "Yes," complete Schedule L, Part III</i>	27		No
28	Was the organization a party to a business transaction with one of the following parties (see Schedule L, Part IV instructions for applicable filing thresholds, conditions, and exceptions)			
a	A current or former officer, director, trustee, or key employee? <i>If "Yes," complete Schedule L, Part IV</i>	28a		No
b	A family member of a current or former officer, director, trustee, or key employee? <i>If "Yes," complete Schedule L, Part IV</i>	28b		No
c	An entity of which a current or former officer, director, trustee, or key employee (or a family member thereof) was an officer, director, trustee, or direct or indirect owner? <i>If "Yes," complete Schedule L, Part IV</i>	28c		No
29	Did the organization receive more than \$25,000 in non-cash contributions? <i>If "Yes," complete Schedule M . . .</i>	29		No
30	Did the organization receive contributions of art, historical treasures, or other similar assets, or qualified conservation contributions? <i>If "Yes," complete Schedule M</i>	30		No
31	Did the organization liquidate, terminate, or dissolve and cease operations? <i>If "Yes," complete Schedule N, Part I</i>	31		No
32	Did the organization sell, exchange, dispose of, or transfer more than 25% of its net assets? <i>If "Yes," complete Schedule N, Part II</i>	32		No
33	Did the organization own 100% of an entity disregarded as separate from the organization under Regulations sections 301.7701-2 and 301.7701-3? <i>If "Yes," complete Schedule R, Part I</i>	33		No
34	Was the organization related to any tax-exempt or taxable entity? <i>If "Yes," complete Schedule R, Part II, III, or IV, and Part V, line 1</i>	34		No
35a	Did the organization have a controlled entity within the meaning of section 512(b)(13)?	35a		No
b	If 'Yes' to line 35a, did the organization receive any payment from or engage in any transaction with a controlled entity within the meaning of section 512(b)(13)? <i>If "Yes," complete Schedule R, Part V, line 2</i>	35b		No
36	Section 501(c)(3) organizations. Did the organization make any transfers to an exempt non-charitable related organization? <i>If "Yes," complete Schedule R, Part V, line 2</i>	36		No
37	Did the organization conduct more than 5% of its activities through an entity that is not a related organization and that is treated as a partnership for federal income tax purposes? <i>If "Yes," complete Schedule R, Part VI</i>	37		No
38	Did the organization complete Schedule O and provide explanations in Schedule O for Part VI, lines 11b and 19? Note. All Form 990 filers are required to complete Schedule O	38	Yes	

Part V

Statements Regarding Other IRS Filings and Tax Compliance

Check if Schedule O contains a response or note to any line in this Part V

☐

			Yes	No
1a	Enter the number reported in Box 3 of Form 1096. Enter -0- if not applicable.	1a0		
b	Enter the number of Forms W-2G included in line 1a. Enter -0- if not applicable.	1b0		
c	Did the organization comply with backup withholding rules for reportable payments to vendors and reportable gaming (gambling) winnings to prize winners?	1c		No
2a	Enter the number of employees reported on Form W-3, Transmittal of Wage and Tax Statements, filed for the calendar year ending with or within the year covered by this return.	2a0		
b	If at least one is reported on line 2a, did the organization file all required federal employment tax returns? Note. If the sum of lines 1a and 2a is greater than 250, you may be required to e-file (see instructions).	2b		No
3a	Did the organization have unrelated business gross income of \$1,000 or more during the year?	3a		No
b	If "Yes," has it filed a Form 990-T for this year? If "No" to line 3b, provide an explanation in Schedule O.	3b		No
4a	At any time during the calendar year, did the organization have an interest in, or a signature or other authority over, a financial account in a foreign country (such as a bank account, securities account, or other financial account)?	4a		No
b	If "Yes," enter the name of the foreign country: _____ See instructions for filing requirements for Form TD F 90-22.1, Report of Foreign Bank and Financial Accounts.			
5a	Was the organization a party to a prohibited tax shelter transaction at any time during the tax year?	5a		No
b	Did any taxable party notify the organization that it was or is a party to a prohibited tax shelter transaction?	5b		No
c	If "Yes," to line 5a or 5b, did the organization file Form 8886-T?	5c		
6a	Does the organization have annual gross receipts that are normally greater than \$100,000, and did the organization solicit any contributions that were not tax deductible as charitable contributions?	6a		No
b	If "Yes," did the organization include with every solicitation an express statement that such contributions or gifts were not tax deductible?	6b		
7	Organizations that may receive deductible contributions under section 170(c).			
a	Did the organization receive a payment in excess of \$75 made partly as a contribution and partly for goods and services provided to the payor?	7a		No
b	If "Yes," did the organization notify the donor of the value of the goods or services provided?	7b		
c	Did the organization sell, exchange, or otherwise dispose of tangible personal property for which it was required to file Form 8282?	7c		No
d	If "Yes," indicate the number of Forms 8282 filed during the year.	7d0		
e	Did the organization receive any funds, directly or indirectly, to pay premiums on a personal benefit contract?	7e		No
f	Did the organization, during the year, pay premiums, directly or indirectly, on a personal benefit contract?	7f		No
g	If the organization received a contribution of qualified intellectual property, did the organization file Form 8899 as required?	7g		No
h	If the organization received a contribution of cars, boats, airplanes, or other vehicles, did the organization file a Form 1098-C?	7h		No
8	Sponsoring organizations maintaining donor advised funds and section 509(a)(3) supporting organizations. Did the supporting organization, or a donor advised fund maintained by a sponsoring organization, have excess business holdings at any time during the year?	8		No
9	Sponsoring organizations maintaining donor advised funds.			
a	Did the organization make any taxable distributions under section 4966?	9a		No
b	Did the organization make a distribution to a donor, donor advisor, or related person?	9b		No
10	Section 501(c)(7) organizations. Enter			
a	Initiation fees and capital contributions included on Part VIII, line 12.	10a		
b	Gross receipts, included on Form 990, Part VIII, line 12, for public use of club facilities.	10b		
11	Section 501(c)(12) organizations. Enter			
a	Gross income from members or shareholders.	11a		
b	Gross income from other sources (Do not net amounts due or paid to other sources against amounts due or received from them).	11b		
12a	Section 4947(a)(1) non-exempt charitable trusts. Is the organization filing Form 990 in lieu of Form 1041?	12a		No
b	If "Yes," enter the amount of tax-exempt interest received or accrued during the year.	12b		
13	Section 501(c)(29) qualified nonprofit health insurance issuers.			
a	Is the organization licensed to issue qualified health plans in more than one state? Note. See the instructions for additional information the organization must report on Schedule O.	13a		No
b	Enter the amount of reserves the organization is required to maintain by the states in which the organization is licensed to issue qualified health plans.	13b		
c	Enter the amount of reserves on hand.	13c		
14a	Did the organization receive any payments for indoor tanning services during the tax year?	14a		No
b	If "Yes," has it filed a Form 720 to report these payments? If "No," provide an explanation in Schedule O.	14b		

Part VI

Governance, Management, and Disclosure

For each "Yes" response to lines 2 through 7b below, and for a "No" response to lines 8a, 8b, or 10b below, describe the circumstances, processes, or changes in Schedule O. See instructions.

Check if Schedule O contains a response or note to any line in this Part VI

Section A. Governing Body and Management

		Yes	No
1a	Enter the number of voting members of the governing body at the end of the tax year		
	If there are material differences in voting rights among members of the governing body, or if the governing body delegated broad authority to an executive committee or similar committee, explain in Schedule O		
b	Enter the number of voting members included in line 1a, above, who are independent		
2	Did any officer, director, trustee, or key employee have a family relationship or a business relationship with any other officer, director, trustee, or key employee?	2	No
3	Did the organization delegate control over management duties customarily performed by or under the direct supervision of officers, directors or trustees, or key employees to a management company or other person?	3	No
4	Did the organization make any significant changes to its governing documents since the prior Form 990 was filed?	4	No
5	Did the organization become aware during the year of a significant diversion of the organization's assets?	5	No
6	Did the organization have members or stockholders?	6	No
7a	Did the organization have members, stockholders, or other persons who had the power to elect or appoint one or more members of the governing body?	7a	No
b	Are any governance decisions of the organization reserved to (or subject to approval by) members, stockholders, or persons other than the governing body?	7b	No
8	Did the organization contemporaneously document the meetings held or written actions undertaken during the year by the following		
a	The governing body?	8a	Yes
b	Each committee with authority to act on behalf of the governing body?	8b	Yes
9	Is there any officer, director, trustee, or key employee listed in Part VII, Section A, who cannot be reached at the organization's mailing address? If "Yes," provide the names and addresses in Schedule O	9	No

Section B. Policies (This Section B requests information about policies not required by the Internal Revenue Code.)

		Yes	No
10a	Did the organization have local chapters, branches, or affiliates?	10a	No
b	If "Yes," did the organization have written policies and procedures governing the activities of such chapters, affiliates, and branches to ensure their operations are consistent with the organization's exempt purposes?	10b	
11a	Has the organization provided a complete copy of this Form 990 to all members of its governing body before filing the form?	11a	Yes
b	Describe in Schedule O the process, if any, used by the organization to review this Form 990		
12a	Did the organization have a written conflict of interest policy? If "No," go to line 13	12a	Yes
b	Were officers, directors, or trustees, and key employees required to disclose annually interests that could give rise to conflicts?	12b	Yes
c	Did the organization regularly and consistently monitor and enforce compliance with the policy? If "Yes," describe in Schedule O how this was done	12c	Yes
13	Did the organization have a written whistleblower policy?	13	Yes
14	Did the organization have a written document retention and destruction policy?	14	Yes
15	Did the process for determining compensation of the following persons include a review and approval by independent persons, comparability data, and contemporaneous substantiation of the deliberation and decision?		
a	The organization's CEO, Executive Director, or top management official	15a	No
b	Other officers or key employees of the organization	15b	No
	If "Yes" to line 15a or 15b, describe the process in Schedule O (see instructions)		
16a	Did the organization invest in, contribute assets to, or participate in a joint venture or similar arrangement with a taxable entity during the year?	16a	No
b	If "Yes," did the organization follow a written policy or procedure requiring the organization to evaluate its participation in joint venture arrangements under applicable federal tax law, and take steps to safeguard the organization's exempt status with respect to such arrangements?	16b	

Section C. Disclosure

17	List the States with which a copy of this Form 990 is required to be filed▶
18	Section 6104 requires an organization to make its Form 1023 (or 1024 if applicable), 990, and 990-T (501(c)(3)s only) available for public inspection. Indicate how you made these available. Check all that apply. ☐ Own website ☐ Another's website ☒ Upon request ☐ Other (explain in Schedule O)
19	Describe in Schedule O whether (and if so, how) the organization made its governing documents, conflict of interest policy, and financial statements available to the public during the tax year
20	State the name, physical address, and telephone number of the person who possesses the books and records of the organization ▶NORTH CENTRAL SOYBEAN RESEARCH 1255 SW Prairie Trail Parkway Ankeny, IA 50023 (515) 334-1060

Part VII

Compensation of Officers, Directors, Trustees, Key Employees, Highest Compensated Employees, and Independent Contractors

Check if Schedule O contains a response or note to any line in this Part VII

Section A. Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees

- 1a Complete this table for all persons required to be listed Report compensation for the calendar year ending with or within the organization's tax year
- List all of the organization's **current** officers, directors, trustees (whether individuals or organizations), regardless of amount of compensation Enter -0- in columns (D), (E), and (F) if no compensation was paid

List all of the organization's **current** key employees, if any See instructions for definition of "key employee "

List the organization's five **current** highest compensated employees (other than an officer, director, trustee or key employee) who received reportable compensation (Box 5 of Form W-2 and/or Box 7 of Form 1099-MISC) of more than \$100,000 from the organization and any related organizations

List all of the organization's **former** officers, key employees, or highest compensated employees who received more than \$100,000 of reportable compensation from the organization and any related organizations

List all of the organization's **former directors or trustees** that received, in the capacity as a former director or trustee of the organization, more than \$10,000 of reportable compensation from the organization and any related organizations

List persons in the following order individual trustees or directors, institutional trustees, officers, key employees, highest compensated employees, and former such persons

☒ Check this box if neither the organization nor any related organization compensated any current officer, director, or trustee

(A) Name and Title	(B) Average hours per week (list any hours for related organizations below dotted line)	(C) Position (do not check more than one box, unless person is both an officer and a director/trustee)						(D) Reportable compensation from the organization (W- 2/1099- MISC)	(E) Reportable compensation from related organizations (W- 2/1099- MISC)	(F) Estimated amount of other compensation from the organization and related organizations
		Individual trustee or director	Institutional Trustee	Officer	Key employee	Highest compensated employee	Former			
(1) Craig Converse	0 00	X						0	0	0
Director	0 00									
(2) RON OHLDE	0 00	X						0	0	0
Director	0 00									
(3) CLIFF MULDER	0 00	X						0	0	0
Director	0 00									
(4) Steve Reinhard	0 00	X						0	0	0
Director	0 00									
(5) GENE STOEL	0 00	X		X				0	0	0
Vice President	0 00									
(6) Scott Houck	0 00	X						0	0	0
Director	0 00									
(7) TREVOR GLICK	0 00	X		X				0	0	0
President	0 00									
(8) CECIL DEMOTT	0 00	X						0	0	0
Director	0 00									
(9) ED CAGNEY	0 00	X		X				0	0	0
Director	0 00									
(10) Jerod Hooker	0 00	X						0	0	0
Director	0 00									
(11) Tyler Speich	0 00	X						0	0	0
Director	0 00									
(12) MIKE CERNY	0 00	X						0	0	0
Secretary/Treas	0 00									

Part VII

[illegible]

2 Total number of individuals (including but not limited to those listed above) who received more than \$100,000 of reportable compensation from the organization 0

		Yes	No
3	Did the organization list any former officer, director or trustee, key employee, or highest compensated employee on line 1a? <i>If "Yes," complete Schedule J for such individual</i>	3	No
4	For any individual listed on line 1a, is the sum of reportable compensation and other compensation from the organization and related organizations greater than \$150,000? <i>If "Yes," complete Schedule J for such individual</i>	4	No
5	Did any person listed on line 1a receive or accrue compensation from any unrelated organization or individual for services rendered to the organization? <i>If "Yes," complete Schedule J for such person</i>	5	No

Section B. Independent Contractors

1 Complete this table for your five highest compensated independent contractors that received more than \$100,000 of compensation from the organization. Report compensation for the calendar year ending with or within the organization's tax year.

(A) Name and business address	(B) Description of services	(C) Compensation

2 Total number of independent contractors (including but not limited to those listed above) who received more than \$100,000 of compensation from the organization ►0

Part VIII

Statement of Revenue

Check if Schedule O contains a response or note to any line in this Part VIII

			(A) Total revenue	(B) Related or exempt function revenue	(C) Unrelated business revenue	(D) Revenue excluded from tax under sections 512-514
Contributions, Gifts, Grants and Other Similar Amounts	1a	Federated campaigns 1a				
	b	Membership dues 1b				
	c	Fundraising events 1c				
	d	Related organizations 1d				
	e	Government grants (contributions) 1e				
	f	All other contributions, gifts, grants, and similar amounts not included above 1f	2,855,813			
	g	Noncash contributions included in lines 1a-1f \$				
	h	Total. Add lines 1a-1f	2,855,813			
Program Service Revenue	2a	Business Code				
	b					
	c					
	d					
	e					
	f	All other program service revenue				
	g	Total. Add lines 2a-2f	0			
	Other Revenue	3	Investment income (including dividends, interest, and other similar amounts)	1,359		
4		Income from investment of tax-exempt bond proceeds	0			
5		Royalties	0			
6a		Gross rents				
b		Less rental expenses				
c		Rental income or (loss)				
d		Net rental income or (loss)	0			
7a		Gross amount from sales of assets other than inventory				
b		Less cost or other basis and sales expenses				
c		Gain or (loss)				
d		Net gain or (loss)	0			
8a		Gross income from fundraising events (not including \$ _____ of contributions reported on line 1c) See Part IV, line 18				
b		Less direct expenses				
c		Net income or (loss) from fundraising events	0			
9a		Gross income from gaming activities See Part IV, line 19				
b		Less direct expenses				
c		Net income or (loss) from gaming activities	0			
10a		Gross sales of inventory, less returns and allowances				
b		Less cost of goods sold				
c		Net income or (loss) from sales of inventory	0			
Miscellaneous Revenue		Business Code				
11a						
b						
c						
d	All other revenue					
e	Total. Add lines 11a-11d	0				
12	Total revenue. See Instructions	2,857,172				1,359

Part IX

Statement of Functional Expenses

Section 501(c)(3) and 501(c)(4) organizations must complete all columns. All other organizations must complete column (A).

Check if Schedule O contains a response or note to any line in this Part IX

Do not include amounts reported on lines 6b, 7b, 8b, 9b, and 10b of Part VIII.		(A) Total expenses	(B) Program service expenses	(C) Management and general expenses	(D) Fundraising expenses
1	Grants and other assistance to governments and organizations in the United States. See Part IV, line 21.	0			
2	Grants and other assistance to individuals in the United States. See Part IV, line 22.	0			
3	Grants and other assistance to governments, organizations, and individuals outside the United States. See Part IV, lines 15 and 16.	0			
4	Benefits paid to or for members.	0			
5	Compensation of current officers, directors, trustees, and key employees.	0			
6	Compensation not included above, to disqualified persons (as defined under section 4958(f)(1)) and persons described in section 4958(c)(3)(B).	0			
7	Other salaries and wages.	0			
8	Pension plan accruals and contributions (include section 401(k) and 403(b) employer contributions).	0			
9	Other employee benefits.	0			
10	Payroll taxes.	0			
11	Fees for services (non-employees):				
a	Management.	0			
b	Legal.	0			
c	Accounting.	0			
d	Lobbying.	0			
e	Professional fundraising services. See Part IV, line 17.	0			
f	Investment management fees.	0			
g	Other (If line 11g amount exceeds 10% of line 25, column (A) amount, list line 11g expenses on Schedule O).	0			
12	Advertising and promotion.	0			
13	Office expenses.	0			
14	Information technology.	0			
15	Royalties.	0			
16	Occupancy.	0			
17	Travel.	0			
18	Payments of travel or entertainment expenses for any federal, state, or local public officials.	0			
19	Conferences, conventions, and meetings.	0			
20	Interest.	0			
21	Payments to affiliates.	0			
22	Depreciation, depletion, and amortization.	0			
23	Insurance.	0			
24	Other expenses. Itemize expenses not covered above (List miscellaneous expenses in line 24e. If line 24e amount exceeds 10% of line 25, column (A) amount, list line 24e expenses on Schedule O).				
a	RESEARCH ACTIVITIES	3,136,852	3,136,852		
b	ADMINISTRATIVE	116,927		116,927	
c					
d					
e	All other expenses	0			
25	Total functional expenses. Add lines 1 through 24e.	3,253,779	3,136,852	116,927	0
26	Joint costs. Complete this line only if the organization reported in column (B) joint costs from a combined educational campaign and fundraising solicitation. Check here ☐ if following SOP 98-2 (ASC 958-720).				

Part X

Balance Sheet

Check if Schedule O contains a response or note to any line in this Part X

				(A)		(B)
				Beginning of year		End of year
Assets	1	Cash—non-interest-bearing		1,225,897	1	300,000
	2	Savings and temporary cash investments		599,994	2	1,990,042
	3	Pledges and grants receivable, net			3	0
	4	Accounts receivable, net		929,695	4	795,248
	5	Loans and other receivables from current and former officers, directors, trustees, key employees, and highest compensated employees. Complete Part II of Schedule L.			5	0
	6	Loans and other receivables from other disqualified persons (as defined under section 4958(f)(1)), persons described in section 4958(c)(3)(B), and contributing employers and sponsoring organizations of section 501(c)(9) voluntary employees' beneficiary organizations (see instructions). Complete Part II of Schedule L.			6	0
	7	Notes and loans receivable, net			7	0
	8	Inventories for sale or use			8	0
	9	Prepaid expenses and deferred charges			9	0
	10a	Land, buildings, and equipment: cost or other basis. Complete Part VI of Schedule D.	10a			
	b	Less: accumulated depreciation	10b		10c	0
	11	Investments—publicly traded securities			11	0
	12	Investments—other securities. See Part IV, line 11.			12	0
	13	Investments—program-related. See Part IV, line 11.			13	0
	14	Intangible assets			14	0
	15	Other assets. See Part IV, line 11.			15	0
	16	Total assets. Add lines 1 through 15 (must equal line 34).		2,755,586	16	3,085,290
Liabilities	17	Accounts payable and accrued expenses		1,874,749	17	2,601,060
	18	Grants payable			18	
	19	Deferred revenue			19	
	20	Tax-exempt bond liabilities			20	
	21	Escrow or custodial account liability. Complete Part IV of Schedule D.			21	
	22	Loans and other payables to current and former officers, directors, trustees, key employees, highest compensated employees, and disqualified persons. Complete Part II of Schedule L.			22	
	23	Secured mortgages and notes payable to unrelated third parties			23	
	24	Unsecured notes and loans payable to unrelated third parties			24	
	25	Other liabilities (including federal income tax, payables to related third parties, and other liabilities not included on lines 17-24). Complete Part X of Schedule D.			25	
	26	Total liabilities. Add lines 17 through 25.		1,874,749	26	2,601,060
Net Assets or Fund Balances	Organizations that follow SFAS 117 (ASC 958), check here ☒ and complete lines 27 through 29, and lines 33 and 34.					
	27	Unrestricted net assets		880,837	27	484,230
	28	Temporarily restricted net assets			28	
	29	Permanently restricted net assets			29	
	Organizations that do not follow SFAS 117 (ASC 958), check here ☐ and complete lines 30 through 34.					
	30	Capital stock or trust principal, or current funds			30	
	31	Paid-in or capital surplus, or land, building or equipment fund			31	
	32	Retained earnings, endowment, accumulated income, or other funds			32	
	33	Total net assets or fund balances		880,837	33	484,230
	34	Total liabilities and net assets/fund balances		2,755,586	34	3,085,290

Part XI Reconciliation of Net Assets

Check if Schedule O contains a response or note to any line in this Part XI

1	Total revenue (must equal Part VIII, column (A), line 12)	1	2,857,172
2	Total expenses (must equal Part IX, column (A), line 25)	2	3,253,779
3	Revenue less expenses Subtract line 2 from line 1	3	-396,607
4	Net assets or fund balances at beginning of year (must equal Part X, line 33, column (A))	4	880,837
5	Net unrealized gains (losses) on investments	5	
6	Donated services and use of facilities	6	
7	Investment expenses	7	
8	Prior period adjustments	8	
9	Other changes in net assets or fund balances (explain in Schedule O)	9	
10	Net assets or fund balances at end of year Combine lines 3 through 9 (must equal Part X, line 33, column (B))	10	484,230

Part XII Financial Statements and Reporting

Check if Schedule O contains a response or note to any line in this Part XII

		Yes	No
1	Accounting method used to prepare the Form 990 ☐ Cash ☒ Accrual ☐ Other _____ If the organization changed its method of accounting from a prior year or checked "Other," explain in Schedule O		
2a	Were the organization's financial statements compiled or reviewed by an independent accountant? If "Yes," check a box below to indicate whether the financial statements for the year were compiled or reviewed on a separate basis, consolidated basis, or both ☐ Separate basis ☐ Consolidated basis ☐ Both consolidated and separate basis		No
2b	Were the organization's financial statements audited by an independent accountant? If "Yes," check a box below to indicate whether the financial statements for the year were audited on a separate basis, consolidated basis, or both ☒ Separate basis ☐ Consolidated basis ☐ Both consolidated and separate basis	Yes	
2c	If "Yes," to line 2a or 2b, does the organization have a committee that assumes responsibility for oversight of the audit, review, or compilation of its financial statements and selection of an independent accountant? If the organization changed either its oversight process or selection process during the tax year, explain in Schedule O	Yes	
3a	As a result of a federal award, was the organization required to undergo an audit or audits as set forth in the Single Audit Act and OMB Circular A-133?		No
3b	If "Yes," did the organization undergo the required audit or audits? If the organization did not undergo the required audit or audits, explain why in Schedule O and describe any steps taken to undergo such audits		

SCHEDULE A

(Form 990 or 990EZ)

Department of the
Treasury
Internal Revenue Service

Public Charity Status and Public Support

Complete if the organization is a section 501(c)(3) organization or a section 4947(a)(1) nonexempt charitable trust.

▶ Attach to Form 990 or Form 990-EZ. ▶ See separate instructions.

▶ Information about Schedule A (Form 990 or 990-EZ) and its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2013

Open to Public Inspection

Name of the organization NORTH CENTRAL SOYBEAN RESEARCH PROGRAM	Employer identification number 42-1394799
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Part I

Reason for Public Charity Status (All organizations must complete this part.) See instructions.

The organization is not a private foundation because it is (For lines 1 through 11, check only one box)

- 1

☐

A church, convention of churches, or association of churches described in **section 170(b)(1)(A)(i).**
- 2

☐

A school described in **section 170(b)(1)(A)(ii).** (Attach Schedule E)
- 3

☐

A hospital or a cooperative hospital service organization described in **section 170(b)(1)(A)(iii).**
- 4

☐

A medical research organization operated in conjunction with a hospital described in **section 170(b)(1)(A)(iii).** Enter the hospital's name, city, and state _____
- 5

☐

An organization operated for the benefit of a college or university owned or operated by a governmental unit described in **section 170(b)(1)(A)(iv).** (Complete Part II)
- 6

☐

A federal, state, or local government or governmental unit described in **section 170(b)(1)(A)(v).**
- 7

☒

An organization that normally receives a substantial part of its support from a governmental unit or from the general public described in **section 170(b)(1)(A)(vi).** (Complete Part II)
- 8

☐

A community trust described in **section 170(b)(1)(A)(vi)** (Complete Part II)
- 9

☐

An organization that normally receives (1) more than 33¹/₃% of its support from contributions, membership fees, and gross receipts from activities related to its exempt functions—subject to certain exceptions, and (2) no more than 33¹/₃% of its support from gross investment income and unrelated business taxable income (less section 511 tax) from businesses acquired by the organization after June 30, 1975 See **section 509(a)(2).** (Complete Part III)
- 10

☐

An organization organized and operated exclusively to test for public safety See **section 509(a)(4).**
- 11

☐

An organization organized and operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more publicly supported organizations described in section 509(a)(1) or section 509(a)(2) See **section 509(a)(3).** Check the box that describes the type of supporting organization and complete lines 11e through 11h

a

☐

Type I

b

☐

Type II

c

☐

Type III - Functionally integrated

d

☐

Type III - Non-functionally integrated

e

☐

By checking this box, I certify that the organization is not controlled directly or indirectly by one or more disqualified persons other than foundation managers and other than one or more publicly supported organizations described in section 509(a)(1) or section 509(a)(2)

f

☐

If the organization received a written determination from the IRS that it is a Type I, Type II, or Type III supporting organization, check this box

g

☐

Since August 17, 2006, has the organization accepted any gift or contribution from any of the following persons?

(i)

A person who directly or indirectly controls, either alone or together with persons described in (ii) and (iii) below, the governing body of the supported organization?

(ii)

A family member of a person described in (i) above?

(iii)

A 35% controlled entity of a person described in (i) or (ii) above?

h

☐

Provide the following information about the supported organization(s)

	Yes	No
11g(i)		
11g(ii)		
11g(iii)		

(i) Name of supported organization	(ii) EIN	(iii) Type of organization (described on lines 1- 9 above or IRC section (see instructions))	(iv) Is the organization in col (i) listed in your governing document?		(v) Did you notify the organization in col (i) of your support?		(vi) Is the organization in col (i) organized in the U S ?		(vii) Amount of monetary support
			Yes	No	Yes	No	Yes	No	
Total									

Part II

Support Schedule for Organizations Described in Sections 170(b)(1)(A)(iv) and 170(b)(1)(A)(vi)
(Complete only if you checked the box on line 5, 7, or 8 of Part I or if the organization failed to qualify under Part III. If the organization fails to qualify under the tests listed below, please complete Part III.)

Section A. Public Support						
Calendar year (or fiscal year beginning in) ▶	(a) 2009	(b) 2010	(c) 2011	(d) 2012	(e) 2013	(f) Total
1 Gifts, grants, contributions, and membership fees received (Do not include any "unusual grants.")	2,948,525	3,704,758	3,453,345	2,989,502	2,855,813	15,951,943
2 Tax revenues levied for the organization's benefit and either paid to or expended on its behalf						0
3 The value of services or facilities furnished by a governmental unit to the organization without charge						0
4 Total. Add lines 1 through 3	2,948,525	3,704,758	3,453,345	2,989,502	2,855,813	15,951,943
5 The portion of total contributions by each person (other than a governmental unit or publicly supported organization) included on line 1 that exceeds 2% of the amount shown on line 11, column (f)						0
6 Public support. Subtract line 5 from line 4						15,951,943

Section B. Total Support						
Calendar year (or fiscal year beginning in) ▶	(a) 2009	(b) 2010	(c) 2011	(d) 2012	(e) 2013	(f) Total
7 Amounts from line 4	2,948,525	3,704,758	3,453,345	2,989,502	2,855,813	15,951,943
8 Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources	1,921	2,032	339	2,452	1,359	8,103
9 Net income from unrelated business activities, whether or not the business is regularly carried on						0
10 Other income. Do not include gain or loss from the sale of capital assets (Explain in Part IV.)						0
11 Total support (Add lines 7 through 10)						15,960,046
12 Gross receipts from related activities, etc. (see instructions)					12	
13 First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a 501(c)(3) organization, check this box and stop here						▶

Section C. Computation of Public Support Percentage		
14 Public support percentage for 2013 (line 6, column (f) divided by line 11, column (f))	14	99 950 %
15 Public support percentage for 2012 Schedule A, Part II, line 14	15	99 940 %
16a 33 1/3% support test—2013. If the organization did not check the box on line 13, and line 14 is 33 1/3% or more, check this box and stop here. The organization qualifies as a publicly supported organization	▶	
b 33 1/3% support test—2012. If the organization did not check a box on line 13 or 16a, and line 15 is 33 1/3% or more, check this box and stop here. The organization qualifies as a publicly supported organization	▶	
17a 10%-facts-and-circumstances test—2013. If the organization did not check a box on line 13, 16a, or 16b, and line 14 is 10% or more, and if the organization meets the "facts-and-circumstances" test, check this box and stop here. Explain in Part IV how the organization meets the "facts-and-circumstances" test. The organization qualifies as a publicly supported organization	▶	
b 10%-facts-and-circumstances test—2012. If the organization did not check a box on line 13, 16a, 16b, or 17a, and line 15 is 10% or more, and if the organization meets the "facts-and-circumstances" test, check this box and stop here. Explain in Part IV how the organization meets the "facts-and-circumstances" test. The organization qualifies as a publicly supported organization	▶	
18 Private foundation. If the organization did not check a box on line 13, 16a, 16b, 17a, or 17b, check this box and see instructions	▶	

Part IIISupport Schedule for Organizations Described in Section 509(a)(2)
(Complete only if you checked the box on line 9 of Part I or if the organization failed to qualify under Part II. If the organization fails to qualify under the tests listed below, please complete Part II.)

Section A. Public Support						
Calendar year (or fiscal year beginning in) ▶	(a) 2009	(b) 2010	(c) 2011	(d) 2012	(e) 2013	(f) Total
1 Gifts, grants, contributions, and membership fees received (Do not include any "unusual grants.")						
2 Gross receipts from admissions, merchandise sold or services performed, or facilities furnished in any activity that is related to the organization's tax-exempt purpose						
3 Gross receipts from activities that are not an unrelated trade or business under section 513						
4 Tax revenues levied for the organization's benefit and either paid to or expended on its behalf						
5 The value of services or facilities furnished by a governmental unit to the organization without charge						
6 Total. Add lines 1 through 5						
7a Amounts included on lines 1, 2, and 3 received from disqualified persons						
b Amounts included on lines 2 and 3 received from other than disqualified persons that exceed the greater of \$5,000 or 1% of the amount on line 13 for the year						
c Add lines 7a and 7b						
8 Public support (Subtract line 7c from line 6.)						

Section B. Total Support						
Calendar year (or fiscal year beginning in) ▶	(a) 2009	(b) 2010	(c) 2011	(d) 2012	(e) 2013	(f) Total
9 Amounts from line 6						
10a Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources						
b Unrelated business taxable income (less section 511 taxes) from businesses acquired after June 30, 1975						
c Add lines 10a and 10b						
11 Net income from unrelated business activities not included in line 10b, whether or not the business is regularly carried on						
12 Other income. Do not include gain or loss from the sale of capital assets (Explain in Part IV.)						
13 Total support. (Add lines 9, 10c, 11, and 12.)						
14 First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a 501(c)(3) organization, check this box and stop here ▶						

Section C. Computation of Public Support Percentage		
15 Public support percentage for 2013 (line 8, column (f) divided by line 13, column (f))	15	
16 Public support percentage from 2012 Schedule A, Part III, line 15	16	

Section D. Computation of Investment Income Percentage		
17 Investment income percentage for 2013 (line 10c, column (f) divided by line 13, column (f))	17	
18 Investment income percentage from 2012 Schedule A, Part III, line 17	18	
19a 33 1/3% support tests—2013. If the organization did not check the box on line 14, and line 15 is more than 33 1/3%, and line 17 is not more than 33 1/3%, check this box and stop here. The organization qualifies as a publicly supported organization ▶		
b 33 1/3% support tests—2012. If the organization did not check a box on line 14 or line 19a, and line 16 is more than 33 1/3% and line 18 is not more than 33 1/3%, check this box and stop here. The organization qualifies as a publicly supported organization ▶		
20 Private foundation. If the organization did not check a box on line 14, 19a, or 19b, check this box and see instructions ▶		

Part IV **Supplemental Information.** Provide the explanations required by Part II, line 10; Part II, line 17a or 17b; and Part III, line 12. Also complete this part for any additional information. (See instructions).

Facts And Circumstances Test

Return Reference	Explanation	
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2013

Open to Public Inspection

SCHEDULE O

(Form 990 or 990-EZ)

Department of the Treasury

Internal Revenue Service

Supplemental Information to Form 990 or 990-EZ

Complete to provide information for responses to specific questions on

Form 990 or to provide any additional information.

▶ Attach to Form 990 or 990-EZ.

▶ Information about Schedule O (Form 990 or 990-EZ) and its instructions is at

www.irs.gov/form990.

Name of the organization

NORTH CENTRAL SOYBEAN RESEARCH PROGRAM

Employer identification number

42-1394799

Return Reference	Explanation
Form 990, Part VI, Line 11b Form 990 Review Process	PRESENTED TO THE BOARD AT THE MEETING HELD ON DECEMBER 9, 2014

Return Reference	Explanation
Form 990, Part VI, Line 12c Explanation of Monitoring and Enforcement of Conflicts	ANNUALLY THE BOARD IS REQUIRED TO DISCLOSE CONFLICTING INTERESTS. BOARD MEMBERS ARE REQUIRED TO RECUSE THEMSELVES FROM ANY VOTE IF THERE IS A CONFLICT

Return Reference	Explanation
Form 990, Part VI, Line 19 Other Organization Documents Publicly Available	Governing documents, conflict of interest policy and financial statements are available to the public upon request

Return Reference	Explanation
Program Description (16)	(16) Plant Health Initiative, (low a Soybean Association), (\$161,291) The goal of this project is to increase grower awareness of solutions for disease and insect problems by transferring knowledge gained from checkoff-funded activities to soybean producers through the electronic and print media The project will continue to position PHI as an authoritative resource of plant health information Project Objectives Provide science-based information to soybean producers that can be used to reduce soybean yield loss from disease and insects, Sponsor conferences and workshops that highlight soybean disease research topics, Develop educational materials that will help soybean growers better manage soybean diseases and pests, and Facilitate and coordinate research and information transfer between industry, university, media and Midwest soybean growers

Return Reference	Explanation	
	Program Descriptions (1) through (5) (1) Breeding to improve resistance to SDS in soybean as a means to protect yield. Delivering resistant varieties and lines, Silva Cianzio (Project Leader, Iowa State University), Jim Orf (University of Minnesota), Dechun Wang (Michigan State University), Jason Bond and Stella Kantartzı (Southern Illinois University), Pengyin Chen (University of Arkansas), Brian Diers (University of Illinois), Glen Hartman (USDA/ARS/University of Illinois), (\$182,034) Soybean yields drive the market and the economics of growers' agricultural business and livelihood. Soybean diseases and environmental factors at times, become yield deterrents and may greatly affect soybean production. Sudden death syndrome (SDS), caused by the fungus <i>Fusarium virguliforme</i>, is one of the diseases that migrating from the south of the U.S. soybean production regions has also caused great losses to yield in the northern regions of the U.S. Depending on the environmental conditions the disease known as SDS can cause yield losses from 10 to 50%. To date, there are no chemical products that may help to control the disease, and management practices have not helped farmers to combat the disease. Genetic resistance is a solution that will help soybean producers increase yield potential, and protect income. Objective: The objective of this project is to develop high-yielding, SDS-resistant soybean cultivars for farmers and lines for the seed industry. The lines will simultaneously protect and increase soybean yields and farmers' income. Varieties and lines will be developed for maturity groups I to VI. (2) Developing an integrated management and communication plan for soybean SDS, Daren Mueller and Leonor Leandro (Co-Project Leaders, Iowa State University), Carl Bradley (University of Illinois), Greg Tylka, J.G. Arbuckle and Silvia Cianzio (Iowa State University), Kiersten Wise, Virginia Ferris and Jamal Faghihi (Purdue University), Martin Chilvers (Michigan State University), Ahmad Fakhoury (Southern Illinois University-Carbondale), Dean Malvick (University of Minnesota), Glen Hartman (USDA/ARS/University of Illinois) and Albert Tenuta (OMAFRA, University of Guelph), (\$168,462) The foundational management strategy for sudden death syndrome (SDS) is using resistant cultivars. However, in years such as 2010 when environmental conditions were favorable for disease development, it is evident that resistance alone does not provide adequate control or reduce farmer risk sufficiently, which provides us with an early education awareness opportunity. Also, SDS continues to move into new areas. Thus, the main goal of this project is to investigate management options that will help ensure resistant cultivars will be as effective as possible thereby reducing risk as well as providing farmers with maximum economic return on their investment even in unusually conducive SDS conditions. This project has a direct benefit to soybean farmers in the North Central region by providing evaluations of current and future crop production practices/products and how these practices will either a) fit into an integrated pest management (IPM) strategy for SDS, or b) affect the ability of resistant cultivars to manage SDS, thus reducing economic losses to producers through better management of SDS. Project Objectives: Determine the most effective diagnostic protocol for quantifying <i>Fusarium virguliforme</i> on roots and in soil, Evaluate if soybean root health can be improved to reduce SDS or be used as an indicator of SDS risk, Determine how shifts in soybean production practices affect the risk of SDS development, and Communicate research results with farmers, agribusinesses and other soybean stakeholders. (3) Disease Study Group: Focus on new and emerging soybean diseases, Kiersten Wise, (Purdue University) and Daren Mueller (Co-project Leaders, Iowa State University), Carl Bradley (University of Illinois), Martin Chilvers (Michigan State University), Loren Giesler (University of Nebraska) and Albert Tenuta (Ontario Ministry of Agriculture & Food) and Damon Smith (University of Wisconsin) no-cost contributors, (\$74,046) (kawise@purdue.edu) Soybean vein necrosis virus (SVNV) was identified as a key disease for which farmers and agribusiness personnel need Extension information. SVNV was widely distributed across the North Central Region in 2012 and 2013. There was little Extension information available at the time to answer stakeholder questions about this new virus-induced disease. For this reason, it was critical to not only improve stakeholder awareness of SVNV but also provide them with additional information to correctly identify and distinguish the disease from other common field problems. This information will help prevent unwarranted management practices that are not effective or economically sustainable. This project directly benefits soybean farmers in the North Central region by providing current Extension material to aid in the identification and management of emerging diseases.	

Return Reference	Explanation	
Program Descriptions (1) through (5)		which lack information. The project uses traditional mechanisms such as fact sheets and bulletins, as well as new web-based technologies such as videos that are downloadable and viewable through smart phones and tablet devices, to create awareness on emerging diseases in soybean production. This information provides soybean farmers in the North Central region with new tools to manage yield limiting diseases on their farms. Project objectives: Provide information on SVNV at multiple levels of Extension interface (print, web, video, etc.) to reach diverse groups of stakeholders, Create a platform to host and brand Extension material developed in conjunction with the North Central Soybean Research Program to facilitate updates and allow users to identify trusted sources of material through this branding partnership, and Provide current research summaries on emerging diseases to direct and coordinate future research priorities thereby minimizing duplication, maximizing resources and increasing response time (4) Engineered resistance to soybean cyst nematode via induced gene silencing (RNAi), Harold Trick (Project Leader), Tim Todd and Jiarui Li (Kansas State University), John Finer (The Ohio State University), Wayne Parrott (University of Georgia) and Lila Vodkin and Jack Widholm (University of Illinois), (\$172,112) Soybean cyst nematode (SCN) continues to be the top biotic stress causing losses in excess of 100 million bushels annually. Incorporation of natural genetic resistance has been only partially effective because it is apparent that the variations within the nematode populations adapt to the new cultivars and overcome resistance genes within a few years. The primary goal of this research project is to establish a new set of biotech traits that have durable resistance to soybean cyst nematode (SCN). Turning off genes by a process known as RNA interference (RNAi) has tremendous potential as a new strategy to increase nematode resistance. Past research with other nematode species has demonstrated the scientific merit of the technique. This project will investigate opportunities to silence specific SCN gene sequences using RNAi in transgenic soybean providing a durable genetic material that will be lethal to SCN populations. The specific objectives of this project are to Engineer stable transgenic soybean plants with traits that can silence specific nematode genes, Evaluate transgenic lines with SCN bioassays to confirm the effectiveness of the level of SCN resistance, and Examine the durability of the transgenic traits on single and diverse populations of SCN (5) Enhancing disease resistance in soybean through the tools of biotechnology, Tom Clemente (University of Nebraska) and Feng Qu (The Ohio State University), (\$152,448) The goals of this research program are to monitor agronomic performance and stability of a multi-viral resistance phenotype under field environments and design and test strategies for controlling soybean aphid predation with the transgenic expression of aphid-targeting RNAi. Research objectives: Determine the long-term agronomic performance, and the stability of the resistance phenotype, of the transgenic soybean expressing a multi-viral resistance trait, and Test the effectiveness of transgenically expressed small interfering RNAs (siRNAs) and microRNAs (miRNAs) in conferring resistance to soybean aphid in soybean.

Return Reference	Explanation	
	Program Descriptions (11) through (15)	(11) Soybean aphid management, resistance, and outreach in the North Central Region, Kelle y Tilmon (Project Leader, South Dakota State University), Erin Hodgson, Matt ONeal and Bry ony Bonning (Iowa State University), John Reese and Brian McCornack (Kansas State University), Dechun Wang (Michigan State University), Deirdre Prischmann, Jason Harmon and Janet K nodel (North Dakota State University), Andy Michel (The Ohio State University), Christian Krupke (Purdue University), Brian Diers, Curt Hill and Matthew Hudson (University of Illinois), David Voegtlin and Rosanna Giordano (Illinois Natural History Survey), Bruce Potter and George Heimpel (University of Minnesota), Tiffany Heng-Moss, Tom Hunt, Blair Siegfried (University of Nebraska), Eileen Cullen, Dave Hogg and Paul Mitchell (University of Wisconsin), Keith Hopper (USDA-ARS, Delaware), Rouf Mian (USDA-ARS, Ohio) and Louis Hesler (USDA-ARS, South Dakota), (\$712,975) The purpose of this project is research and outreach on t he soybean aphid, Aphis glycines. The soybean aphid is the most damaging insect pest to soybean production in the North Central region, capable of causing yield loss of 40% or more if not properly managed. Though there are well-researched economic thresholds and many available insecticides, producers face an increasing variety of choices for soybean aphid management. These include aphid-resistant varieties and new chemicals (notably, insecticidal seed treatments). Producers must also take into account factors such as environmental and crop variables, or the potential presence of new virulent aphid biotypes. These management factors and choices have potentially large financial implications, and yet research-based advice on many of them are still largely lacking. This project combines the multidisciplinary expertise of 26 scientists in 12 states, including entomologists, geneticists, plant breeders, agricultural economists, and Extension specialists. This multidisciplinary research proposal is organized into five large objectives, each with associated sub-objectives. Project Objectives: Integrated Pest Management- Regional studies on aphid-resistant cultivars- Efficacy and value of seed treatments- Economic analyses of soybean aphid management strategies- Monitor for aphid resistance to insecticides- Seasonal, environmental, and landscape factors. Breeding and Genetic Resistance to Soybean Aphid- Discover new aphid resistance and tolerance genes- Characterize aphid resistance genes- Breed aphid resistant germplasm and cultivars. Soybean Aphid Biotypes- Characterize genetic variation of soybean aphid - Maintain soybean aphid biotype stock center. Biological Control- Importation biological control- Development of a soybean aphid virus. Extension and Outreach- Outreach coordinator to extend NCSRP aphid project results - Augment delivery of NCSRP project results in multiple states. Resistant varieties, seed treatments, agronomic factors, and the economic return on different management strategies are all part of the increasingly complex aphid pest management options available to producers. Data generated from these objectives will provide unbiased results to help producers make profitable and sustainable management decisions. (12) The use of VIGS technology to decrease yield-limiting stress in soybeans, John Hill, St eve Whitman, Leonor Leandro and Thomas Baum (Iowa State University), Randy Shoemaker and Michelle Graham (USDA/ARS/Iowa State University), Kerry Pedley (USDA/ARS/Fort Detrick), Craig Grau (University of Wisconsin) and Dean Malvick (University of Minnesota), (\$155,427) (A project funded jointly with the United Soybean Board). The project's goal is to understand the genetic pathways involved in biotic and abiotic stress resistance to enable the development of soybean germplasm with new defensive features leading to the breeding of soybean varieties that respond less to the variation of growing conditions. The VIGS technology uses bean pod mottle virus to carry pieces of soybean gene sequences into the plant to turn off (silence) requisite target genes. VIGS technology allows for rapid screening and assessing the function of the genes being tested. This is a project funded jointly by the United Soybean Board/North Central Soybean Research Program, Iowa Soybean Association, and the National Science Foundation. The USB/NCSRP funding constitutes one leg of a three-legged stool for support of this effort. Project Objectives: Optimize BPMV-DNA-based vector for developing a virus-based high-throughput gene silencing system, Use high-throughput gene silencing to identify soybean genes involved in resistance to biotic and abiotic stress, Select appropriate genes for development of soybean germplasm with new defensive features, and Conduct bi-annual meetings of the collaborators to review all data, discuss difficulties, suggest alternatives, coordinate studies and plan further initiatives. (13) Mapping genes referring resistance to white mold, Brian Diers (U

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Program Descriptions (11) through (15)		niversity Of Illinois) and Crag Grau (University of Wisconsin), (\$25,000) White mold can cause significant yield losses to growers when environmental conditions are favorable to disease development. Although genetic resistance to white mold has been reported, the sporadic nature of the disease has made the development of resistant varieties difficult. This is because varieties are often developed and marketed before there is an opportunity to test them for resistance. In this project, we are mapping genes that confer resistance to white mold. The availability of genetic markers that can be used to select for these resistance genes has the potential for improving progress in breeding for white mold resistance. Project Objective is to identify genetic markers associated with resistance to white mold through genetic mapping (14) Understanding cover crop use in soybean production systems, Dean Baas (Project Leader, Michigan State University), Eileen Kladvko and Shaun Casteel (Purdue University), David Clay and Sharon Clay (South Dakota State University), Jim Hoorman (The Ohio State University), Don Wyse (University of Minnesota), Richard Hoormann (University of Missouri), Matt Ruark (University of Wisconsin) and Tom Kaspar (USDA/ARS/Iowa State University), (\$157,645) The benefits of including cover crops in crop rotations have been widely documented. However, in the North Central Region (NCR), soybean farmers have voiced a number of concerns about reliably establishing cover crops after harvest and the length of time cover crops can grow with our long and cold winters. To date a review, evaluation and consolidation of NCR-based information detailing management practices, agronomic benefits and value of cover crops in soybean production systems has not been undertaken. The Midwest Cover Crops Council (MCCC) is collaborating to produce a consensus guide of current knowledge on cover crop use in NCR soybean systems. Through this region-wide review of existing information, the MCCC will identify collaborative research that could fill the gaps in knowledge to further promote and improve cover crop use in soybean production. Project Objectives: Conduct surveys and interviews with soybean farmers about cover crop use in NCR states, Identify and review the literature for soybean production with cover crops in the rotation, Compile, review and consolidate NCR information on soybean production using cover crops, Develop a management guide for NCR farmers for soybean production using cover crops, and Assess and prioritize future research needs to increase cover crop use in soybean systems (15) Characterization of Promoters from Soybean Pathogen-responsive Genes, John Finer (The Ohio State University-Project Leader), Anne Dorrance (The Ohio State University), Steve Clough (USDA/ARS/University of Illinois), and Matthew Hudson (University of Illinois), Promoters are key regulators of gene expression and, thus, have numerous applications in basic research and transgenic technology. In soybean, only a few pathogen responsive promoters have been cloned and characterized. To improve our understanding of defense responses and enhance the toolbox for engineering soybean resistant plants, we are studying the induction of pathogen responsive genes using transcriptomic data from soybean. We identified 24 genes highly up-regulated after inoculation with several soybean pathogens and cloned and characterized their promoter regions using rapid validation tools and transgenic plants. Project Objectives: Select pathogen-responsive genes and clone promoter regions, Evaluate defense response promoters using rapid validation tools, Generate transgenic soybean, for evaluation of promoter induction using pathogens, and Identify components of the promoter, which contribute to gene expression.

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	Program Descriptions (6) through (10)	(6) Evaluation and development of a biological control product to control SDS and white mold, X B Yang (Project Leader) and Shrishall Navi (Iowa State University), Carl Bradley and Youfu Zhao (University of Illinois) and James Kurle (University of Minnesota), (\$174,193) Sudden death syndrome (SDS) and white mold are two of the most important fungal diseases in soybean production in the US, affecting 40 - 50 million acres in the North Central Region. These two diseases threaten the sustainable production of soybean in the North Central Region. Biological control products are the future for disease management in row crops and private industry has made significant progress in development of biological fungicides for row crops. The goal of this proposal is to evaluate their effectiveness of potential biological control agent in other states of the North Central Region and develop the agent into a product for commercial use, which will provide reliable and cost-effective control of SDS and white mold of soybean. Project Objectives To conduct multi-state field evaluation for fungal biological control agents that are found effective in reducing soybean sudden death syndrome and white mold, To investigate a wide-host-range bacterial bio-control agent that is effective in killing SDS and white mold pathogens for management of SDS and white mold in Illinois, To collect data of prototype product of the biological control agent for commercialization, and To determine if application of the biocontrol agent to crop residues of corn, alfalfa, or soybean can reduce inoculum production, infection, and disease caused by <i>F. virguliforme</i> and <i>Sclerotinia</i>. (7) Identification and biology of seedling pathogens of soybean, Jason Bond (Southern Illinois University) and John Rupe (University of Arkansas) (Co-Project Leaders), Carl Bradley (University of Illinois), Leonor Leandro, Alison Robertson and Gary Munkvold (Iowa State University), Chris Little (Kansas State University), Martin Chilvers (Michigan State University), Berlin Nelson (North Dakota State University), Kiersten Wise (Purdue University), Ahmad Fakhoury (Southern Illinois University), Anne Dorrance (The Ohio State University), Jim Kurle and Dean Malvick (University of Minnesota), Loren Giesler (University of Nebraska), Kelly Heather (University of Tennessee), and Albert Tenuta (Agriculture Canada), (\$576,758) (This project is jointly funded by USB and NCSRP) Seedling diseases in the US annually reduce soybean yield by of 829,000 tons. This project is addressing these production constraints by identifying the causal agents of seedling disease, developing new tools for rapid diagnosis, developing new protocols for research and for germplasm screening assays, and developing management recommendations for producers and the industry. Project Objectives Identify fungi responsible for causing seedling blights of soybean, Develop high throughput diagnostic tools for identification of seedling pathogens, Characterize the biology of seedling pathogens and develop assays for inoculation, Identify the impact of environmental conditions on seedling pathogens & epidemiology, and Develop educational resources on seedling diseases. (8) Improving awareness and management of Charcoal rot in soybean in the North Central Region, Damon Smith (Project Leader, University of Wisconsin), Daren Mueller (Iowa State University), Doug Jardine (Kansas State University), Marlin Chilvers (Michigan State University), Teresa Hughes and Kiersten Wise (Purdue University), Connie Strunk and Bob Fanning (South Dakota State University), Anne Dorrance and Terry Niblack (The Ohio State University) and Carl Bradley (University of Illinois), (\$100,000) Charcoal rot is caused by the soilborne fungus <i>Macrophomina phaseolina</i>, which has a very broad geographical distribution and can infect over 500 crops and weed species. Until more recently, <i>M. phaseolina</i> was considered a southern soybean pathogen and an infrequent pathogen of soybean in the North Central production region. The research and outreach efforts presented here provide the necessary resources for presenting stakeholders in the North Central region with the most up-to-date information for understanding and managing charcoal rot in the North Central region. Project objectives Establish a field demonstration plot in Iowa to complement those already established in Indiana, Ohio, Wisconsin, and Michigan and funded by the United Soybean Board. These plots will increase grower awareness of charcoal rot of soybean and showcase some potential best management practices (BMPs) for the disease in the North Central Region, and Develop new and up-to-date outreach materials including a feature article and video clips (to be hosted at www.planthealthinfo) pertaining to charcoal rot of soybean and showcasing some potential best management practices (BMPs) for the disease in the North Central Region. (9) Increasing profits through genetic resistance to SDS, Brian Diers (Pro

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	Program Descriptions (6) through (10)	ject Leader) and Osman Radwan (University of Illinois), Jason Bond (Southern Illinois University), Dechun Wang (Michigan State University) and Glen Hartman (USDA/ARS/University of Illinois), (\$166,925) Sudden death syndrome is an important disease of soybean and was estimated to cause annual losses averaging 34 million bushels each year from 2006-2010. SDS has recently moved north and has now become a major concern in MG I and II growing regions. Resistant cultivars are the most effective management option for growers to control this disease. Some cultivars show good resistance to SDS, however, the inheritance of this resistance is complex because it is controlled by many genes. The research in this proposal is focused on improving our understanding of the genetic basis of resistance to SDS, which should help breeders become more efficient in developing new, high yielding SDS resistant cultivars. Growers will see the benefits of this project through increased SDS resistance in private and public varieties. Project Objectives Map the locations on chromosomes of genes that confer resistance to SDS and develop molecular markers linked to resistance genes, Confirm the effects of mapped genes so they can be bred into elite soybean breeding lines as part of the breeding proposal, and Identify genes related to SDS resistance by gene expression profiling soybean roots and leaves. (10) Iron deficient chlorosis. Getting to the root of the problem, Phil McClean (Project Leader, North Dakota State University), Carroll Vance (USDA/ARS, St. Paul) and Robert Stupar (University of Minnesota), (\$136,683) Soybean cultivars or breeding materials that combine complete tolerance to the IDC and acceptable yields are not available. The confounding factor is that the conditions necessary for screening are not found in all disease prone (hot) fields each year. To address this concern, molecular markers have been identified that are being used to test breeding materials. The purpose of this continuing project is to address iron deficiency chlorosis in the upper Midwest using a combination of molecular genetics and gene cloning and manipulation. This is a coordinated project that combines the results of two distinct, but complementary approaches to solving this significant production constraint. Project Objectives Utilize genotype-by-sequencing and genomic selection procedures to broaden the number of markers associated with IDC tolerance in soybean and test those in breeding programs, Further refine the region associated with IDC tolerance on chromosome 3 to better understand the mechanisms of IDC tolerance, and Evaluate transgenic plants containing targeted genes involved in iron metabolism to determine their role in IDC tolerance.