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New Hampshire
Department of Agriculture,
Markets & Food

Shawn N. Jasper, Commissioner

January 7, 2021

His Excellency, Governor Christopher T. Sununu
and the Honorable Council
State House
Concord, New Hampshire 03301

REQUESTED ACTION

Authorize the New Hampshire Department of Agriculture, Markets & Food, Division of Pesticide Control to grant funds and enter into a Cooperative Project Agreement, in the amount of \$49,193, with the University of New Hampshire Office of Sponsored Research, vendor #177867, for the advancement of agricultural research and to assist in the promotion of Integrated Pest Management practices in New Hampshire, for the period from Governor and Council approval through December 31, 2021. 100% Other Funds.

Funding is available in account, Integrated Pest Management, as follows:

02-18-18-183010-21820000 INTEGRATED PEST MANAGEMENT

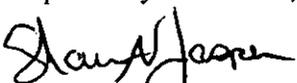
OBJECT

<u>CLASS</u>	<u>ACCOUNT</u>	<u>FY 2021</u>	<u>Total</u>
075-500590	Grants and Subsidies	\$49,193	\$49,193

EXPLANATION

The New Hampshire Department of Agriculture, Markets and Food (NHDAMF), Division of Pesticide Control in fulfilling its responsibilities under the Integrated Pest Management (IPM) Program, RSA 430:50; to promote the principles of IPM and assist New Hampshire citizens to advance the practice of such principles, has reviewed the project, "*Cooperative Extension Support for Integrated Pest & Pollinator (IPPM) Program in NH Apple*", and finds it exemplifies good practices associated with Integrated Pest Management. The research and educational aspects associated with this project and the efforts of the University of New Hampshire Cooperative Extension identify and establish integrated pest management methods with a focus on tools for assessing and supporting pollinator health relative to apple production. Experience and results of this project serve the benefit of all citizens of New Hampshire. The attachment includes a summary of the project and the dollar amount associated with each component.

Respectfully submitted,


Shawn N. Jasper
Commissioner

COOPERATIVE PROJECT AGREEMENT

between the

STATE OF NEW HAMPSHIRE, Department of Agriculture, Markets & Food
and the

University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

- A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Department of Agriculture, Markets & Food**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.
- B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **6/30/21**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.
- C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibit A, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: Cooperative Extension Support for Integrated Pest & Pollinator Management (IPPM) Program in NH Apple

- D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator

Name: David J. Rousseau
Address: State House Annex
25 Capital Street
PO Box 2042
Concord, NH 03301
Phone: 603 271-3640

Campus Project Administrator

Name: Cheryl Moore
Address: University of New Hampshire
Sponsored Programs Administration
51 College Rd. Rm 113
Durham, NH 03824
Phone: 603-862-1992

- E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director

Name: David J. Rousseau
Address: State House Annex
25 Capital Street
PO Box 2042
Concord, NH 03301
Phone: 603 271-3640

Campus Project Director

Name: Anna Wallingford
Address: UNH Cooperative Extension
38 Academic Way, Spaulding Hall
Durham, NH 03824-3585
Phone: 603 645- 5252

F. Total State funds in the amount of \$49,193 have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph.

Check if applicable

Campus will cost-share _____ % of total costs during the term of this Project Agreement.

Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. _____ from _____ under CFDA# _____. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

Article(s) _____ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H. State has chosen **not to take** possession of equipment purchased under this Project Agreement.
 State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the University of New Hampshire and the State of New Hampshire, Department of Agriculture, Markets & Food have executed this Project Agreement.

**By An Authorized Official of:
University of New Hampshire**

Name: Karen M. Jensen
Title: Sponsored Programs Administration, Director
Pre-award
Signature and Date: Karen Jensen 12/1/20

**By An Authorized Official of:
Department of Agriculture, Markets &
Food**

Name: Shawn N. Jasper
Title: Commissioner
Signature and Date: Shawn N. Jasper

**By An Authorized Official of: the New
Hampshire Office of the Attorney General**

Name: ~~Erik Dal~~ Stacie M. Moeser
Title: Assistant Attorney General
Signature and Date: Stacie M. Moeser 01/13/2021

**By An Authorized Official of: the New
Hampshire Governor & Executive Council**

Name: _____
Title: _____
Signature and Date: _____

EXHIBIT A

- A. Project Title:** Cooperative Extension Support for Integrated Pest & Pollinator Management (IPPM) Program in NH Apple
- B. Project Period:** January 13, 2021 through June 30, 2021
- C. Objectives:** The objectives of the University of New Hampshire are to assist the Department of Agriculture, Markets & Food in the promotion and advancement of Integrated Pest Management in New Hampshire
- D. Scope of Work:** A detailed scope of work is on file with the Department of Agriculture, Markets & Food and described in Item G ("Other") of Attachment A of this agreement.
- E. Deliverables Schedule:** A detailed description with schedule is on file with the Department of Agriculture, Markets & Food Major Project Components:

Supplies and services to examine a broad range of treatment options relative to apple production in consideration of pollinator protection.

Final Report: July 31, 2021.

- F. Budget and Invoicing Instructions:** Campus will submit invoices to State on regular Campus invoice forms no more frequently than monthly and no less frequently than quarterly. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories. State will pay Campus within 30 days of receipt of each invoice. Campus will submit its final invoice not later than 60 days after the Project Period end date. Any unused funds must be returned to the State after the project end date.

Budget-Items	State Funding	Cost Sharing (if required)	Total
1. Salaries & Wages	\$ 690	0	\$ 690
2. Employee Fringe Benefits	302	0	302
3. Travel	1,150	0	1,150
4. Supplies	36,400	0	36,400
5. Services	500	0	500
6. Facilities & Admin. Costs	10,151	0	10,151
Subtotals		0	\$49,193
In Kind Contribution		0	0
Total Project Costs			\$49,193

G. Other

A representative of the Department of Agriculture, Markets & Foods reserves the right to attend seminars and audit any work performed by the grant recipient.

Attachment A: Project Proposal - "Cooperative Extension Support for Integrated Pest & Pollinator (IPPM) Program in NH Apple"

I. Itemized Budget

Funding can only be used for items detailed in your budget. Requests for the purchase of nonconsumable equipment that may serve a broader purpose than the IPM project will be rejected. Itemized budget must be specific.

Expense Account	Total
Personnel	
Anna Wallingford, Extension State Specialist (0.1 month)	\$ 690
Benefits	\$ 302
Travel	
Mileage: 2000 miles; @ 0.575/mile	\$1,150
Supplies	\$ 500
Services	
Alina Harris, Xerces/NRCS IPPM Biologist (20h/week, 28 weeks @ \$50/h)	\$28,000
Kathleen Leahy, Polaris Orchard Consulting (10h/month, 12 months, @ \$70/h)	\$ 8,400
Subtotal above	\$39,042
Indirect costs at 26%	\$10,151
Total Project Costs	\$49,193

Personnel: \$690

Anna Wallingford, UNH Extension State Specialist, (0.1 months) will act as project manager for the objectives outlined in this proposal.

Fringe Benefits Rate(s): \$302

The Frnge benefit rate (43.8%) is based on UNH's most current Rate Agreement with the U.S. Department of Health and Human Services, as required under Uniform Guidance. A copy of the Rate Agreement is provided annually to the NH Department of Administrative Services. The full Employee Benefits rate (43.8%) applies to salaries and wages, except for hourly and college work study wages, FICA-eligible graduates student pay, faculty summer salaries, and other exceptions to faculty and staff contract pay.

Travel: \$1,150

This application is requesting \$1,150 to support project staff travel activities. Mileage and per diem expenses will be reimbursed at the current federal rates. Travel expenses will include in-state travel to farms participating in the project, and travel to regional tree fruit meetings. We request \$1,150 for in-state travel as we estimate approximately 500 miles per week for a 4 week period (2000 mi, \$0.575/mi).

Supplies & Services: \$36,400

This application is requesting \$28,000 for contract services from Alina Harris, Xerces/NRCS IPPM Biologist (20 h/week, 28 weeks @\$50/h). Ms. Harris will be responsible for managing IPPM programming through the NRCS and will provide the majority of one-on-one services for collaborating farmers in this project, including regular check-ins with pilot participants and assistance in pollinator assessment. We are also requesting \$8,400 for contract services from Kathleen Leahy, Polaris Orchard Consulting (estimated 10 hr/month for 12 months @\$70/h). Ms. Leahy has been an apple crop protection consultant for more than 20 years. She will be providing her monitoring and IPM expertise to the final IPPM guide and will provide regular consultation to members of the IPPM team and participating growers.

We are requesting \$500 for the purchase of project supplies/services directly related to the support of this project. Funds will be used for purchasing traps and other monitoring supplies.

Facilities and Administrative Costs Rate: \$10,151

Facilities and Administrative Cost Rate (26%) based on UNH's most current Rate Agreement with the U.S. Department of Health and Human Services, as required under Uniform Guidance, unless capped by the State of New Hampshire or Federal Sponsor. A copy of the Rate Agreement is provided to the NH Department of Administrative Services when rates change.

II. Project Description (3 lines or less, to be used for publicity purposes):

Pollinating insects offer critical ecosystem services to crops, like apple, and many conventional pest management practices can negatively affect the health of those pollinator communities in and around orchards. An integrated pest & pollinator management (IPPM) plan has been developed for NH orchardists, which requires some major changes to existing IPM programs as well as practices that enhance pollinator habitat. This project will provide educational support for orchardists who are taking on additional risks to their business, in order to conserve beneficial insects and provide healthy produce to NH residents.

III. Project Objectives (be sure to include how this project serves the concepts of IPM):

- Develop a program to support the new apple IPPM plan in New Hampshire orchards, in collaboration with Xerces Society and the Natural Resource Conservation Service (NRCS).
 - Identify pest problems that will most likely be affected by adopting proposed changes in IPM practices.
 - Provide one-on-one support to orchardists adopting proposed changes in IPM practices, including pest monitoring, pesticide selection, habitat enhancement
 - Produce a best practices guide for apple IPPM program.
- Evaluate web tools for assessing pollinator health in and around the orchard
 - Assist orchardists in identifying pollinator habitat surrounding crop space using BeeScape web tool (beescape.org)
 - Assist orchardists in evaluating the ecosystem services provided by their wild pollinators using the Northeast Pollinator Partnership Data Collection webap (northeastpollinatorpartnership.org)

IV. Economic and Environmental Impact

Integrated pest management (IPM) is a process where crop losses are avoided using the most economically and environmentally sustainable methods possible. Using knowledge of pest biology, monitoring, and thresholds, managers can forego unnecessary pesticide applications (i.e. applications that are not worth their cost compared to the economic injury caused by the pest). Elimination of unnecessary pesticide application also contributes to pollinator health in an IPPM plan.

Northeast apple orchards are home to hundreds of species of native bee pollinators, as well as managed honey bee and bumble bee hives that live in the orchard year-round or those that are rented specifically for the bloom period. While foraging for nectar and pollen food sources, these bees transfer pollen from tree to tree and this cross-pollination results in the development of marketable fruit. Reducing negative impacts of orchard management to bee health not only contributes to the health of the surrounding environment, but also contributes to the resilience of this ecosystem service delivered by native bees.

A phone survey of [20] NH orchardists, conducted at the end of the 2019 season, found that 40% of respondents rent honey bees or buy bumble bee colonies every year, 50% have honey bee hives on-site that incur some expenses, and 90% reported that an assessment of native pollinator services would have value to them. Many who were interested in native pollinator assessment reported that thinking about establishing pollinator habitat and an assessment of native bees could help them gauge how valuable that effort might be.

V. How will your goals be accomplished? (i.e., experimental design)

A pollinator protection plan has been proposed for NH apple IPPM, but has not yet been attempted in commercial orchards. We will work closely with a group of 3-4 pilot participants to identify any unforeseen impacts of adopting changes to their existing IPM practices. While our proposed changes are meant to both avoid economic injury and avoid unnecessary applications of pesticides, certain practices may require learning new pest monitoring skills or taking on additional risk by trying something new. By regularly checking in with pilot participants, we can identify when education is necessary and offer another set of eyes to identify pest problems before they reach economic threshold.

This project will culminate with the production of a best practices guide specifically for future participants in our apple IPPM program. Existing guides offer advice on pollinator protection in apple (e.g. New England Tree Fruit Management Guide or Cornell's Pesticide Decision-Making Guide), but this guide will provide clear actions for participation in our program and will be vetted through the experiences we gain in the pilot program.

Two major aspects to our proposed pollinator protection plan include improving existing pollinator habitat (e.g. flowering resources, overwintering habitats) and taking steps to protect pollinator habitat from pesticide drift. A baseline assessment of existing wild pollinators will be a powerful tool in convincing orchardists that improvements to habitat will benefit their business. Additionally, identification of potential pollinator habitat surrounding the orchard (crop and non-crop habitat) will help to identify areas where pesticide drift is a concern. We will work with at least 20 NH orchards to assess pollinator populations and habitat during apple bloom in the 2021 season. One or more of our team will visit each orchard during bloom, to assess pollinator visitation and train orchardists how to identify common wild bee species with the help of web tools.

VI. Sampling Methods (if applicable):

We will regularly check-in with pilot participants throughout the 2021 season (phone/email/site-visits) and track critical information pertaining to pest organism development (e.g. growing degree days, infection periods for apple scab and other fungal diseases, monitoring population dynamics for San Jose scale, codling moth, plum curculio, apple maggot, brown marmorated stink bug). A pre-harvest apple evaluation will be carried out to identify injury due to pest organisms. Pilot participants will provide complete spray records at the end of the season.

Pollinator assessments will be three 5-minute observations, where the number of bees visiting apple blooms within a 1 m space are recorded. With the help of the Northeast Pollinator Partnership Data Collection App, our in-person training sessions will help orchardists learn to identify their dominant bee species, distinguish between native bees and honey bees, and give them a tool for assessing how valuable their wild bees are to their business.

VII. How will your data be evaluated?

We will compare pest injury in pilot program orchards to state-wide average pest injury observed by UNH Extension pre-harvest apple evaluations (September 2021), as well as to their own historical data from the past 10 years of pre-harvest apple evaluations (Eaton & Wallingford, unpublished data). Input from pilot participants will be incorporated into the final IPPM guide.

Pollinator assessment visits will be followed by a survey to answer the following questions:

- Did you improve your ability to distinguish native bees from honey bees?
- Did you find beescape.org to be a helpful tool, which you would recommend to your peers?
- Did you find the Northeast Pollinator Partnership Data Collection webapp to be a helpful tool, which you would recommend to your peers?
- What changes will you make to managing your orchard based on pollinator assessment (no change, establish habitat, honey bee rental, etc.)?

VIII. Explain how the results of your project will be shared/publicized.

All published literature (papers, presentations, publications, advertisements, etc.) must contain a statement attributing funding to the New Hampshire Department of Agriculture, Markets and Food IPM Grant Program. Publications must be submitted with the final report.

The results of this project will be shared at NH Tree Fruit grower meetings, including daylong workshops and on-farm twilight meetings. Our findings will also be incorporated into the final guide which will be distributed to all NH orchardists in order to promote participation in the full IPPM program in 2021 and beyond.

IX. Detail how other groups may adopt some of the information you learn or develop:

This project will be conducted in collaboration with Xerces and NRCS, both of which have national audiences. The materials generated by this project will be used for similar programs in the northeastern states. Furthermore, lessons learned by collaborating directly with NH orchardists will serve as a framework for similar projects in regions beyond the northeast.

Provide a complete list of all persons involved in the proposed project; include the names, addresses and phone numbers of the individuals.

Amy Papineau, Food and Agriculture Program Team Leader
UNH Cooperative Extension
Taylor Hall
Durham, NH 03824
Phone: 603-862-1601
Email: amy.papineau@unh.edu

Anna Wallingford, Extension State Specialist
UNH Cooperative Extension
38 Academic Way - 133 Spaulding Hall
Durham, NH 03824
Phone: 603-862-1734
Email: anna.wallingford@unh.edu

Kathleen Leahy, IPM Specialist
Polaris Orchard Management
Phone: 413-374-7669
Email: polarisipm.com

Alina Harris, IPPM Biologist
USDA Natural Resources Conservation Service
273 Locust St. Suite 2D
Dover, NH 03820

Don Keirstead, State Resource Conservationist
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Eric Venturini, Pollinator Conservation Specialist
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Kelly Gill, Senior Pollinator Conservation Specialist
The Xerces Society for Invertebrate Conservation - New Jersey
Email: kelly.gill@xerces.org

Emily May, Pollinator Conservation Specialist
The Xerces Society for Invertebrate Conservation - Connecticut
Email: kelly.gill@xerces.org

Mace Vaughan, Pollinator Program Co-Director
The Xerces Society for Invertebrate Conservation - Oregon
Email: kelly.gill@xerces.org

EXHIBIT B

This Project Agreement is funded under a Grant/Contract/Cooperative Agreement to State from the Federal sponsor specified in Project Agreement article F. All applicable requirements, regulations, provisions, terms and conditions of this Federal Grant/Contract/Cooperative Agreement are hereby adopted in full force and effect to the relationship between State and Campus, except that wherever such requirements, regulations, provisions and terms and conditions differ for INSTITUTIONS OF HIGHER EDUCATION, the appropriate requirements should be substituted (e.g., OMB Circulars A-21 and A-110, rather than OMB Circulars A-87 and A-102). References to Contractor or Recipient in the Federal language will be taken to mean Campus; references to the Government or Federal Awarding Agency will be taken to mean Government/Federal Awarding Agency or State or both, as appropriate.

Special Federal provisions are listed here: None or **Uniform Guidance issued by the Office of Management and Budget (OMB) in lieu of Circulars listed in paragraph above.**