New Hampshire
Department of Agriculture,
Markets & Food

Lorraine S. Merrill, Commissioner

February 26, 2014

Her Excellency, Governor Margaret Wood Hassan
and the Honorable Council
State House
Concord, New Hampshire 03301

Dear Governor Hassan and Honorable Council:

REQUESTED ACTION

Authorize the New Hampshire Department of Agriculture, Markets and Food, Division of Pesticide Control to enter into a Cooperative Project Agreement, in the amount of $49,295, 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 April 1, 2015. 100% Other Funds - Integrated Pest Management Fund.

Funding is available in account, Integrated Pest Management, as follows with the authority to adjust encumbrances in each of the State fiscal years through the Budget Office if needed and justified.

Funding is available in account, Integrated Pest Management, as follows:
02-18-18-183010-21820000 INTEGRATED PEST MANAGEMENT

OBJECT CLASS	ACCOUNT	FY 2014	FY2015	Total
075-500590	Integrated Pest Mgmt	$29,171	$20,124	$49,295

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, "*2014 IPM Program for Vegetable Growers in New Hampshire*", 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 the presence and treatment methods for pests common to sweet corn and vine crops. It also includes a pesticide sprayer calibration component, important to ensure proper use of spray equipment. The 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,

Lorraine S. Merrill
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 **4/1/15**. 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: **2014 IPM Program for Vegetable Growers in New Hampshire**

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	**Campus Project Administrator**
Name: David J. Rouuseau	Name: Dianne Hall
Address: State House Annex 25 Capitol Street P.O. Box 2042 Concord, NH 03301	Address: University of New Hampshire Sponsored Programs Administration 51 College Road Durham, NH 03824
Phone: 603 271-3640	Phone: 603 862-1942

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	**Campus Project Director**
Name: David J. Rousseau	Name: George Hamilton
Address: State House Annex 25 Capitol Street P.O. Box 2042 Concord, NH 03301	Address: UNH Cooperative Extension Hillsborough Country 329 Mast Road, Room 101 Goffstown, NH 03045
Phone: 603 271-3640	Phone: 603 641- 6060

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F. Total State funds in the amount of **$49,295** 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: Manager, Sponsored Programs Administration
Signature and Date: 2/24/14

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

Name: Lorraine Merrill
Title: Commissioner
Signature and Date: 2-26-14

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

Name: Rosemary Wiant
Title: Assistant Attorney General
Signature and Date: 3-6-14

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

Name:
Title:
Signature and Date:

Campus Authorized Official KJ
Date 2/24/14

EXHIBIT A

A. Project Title: 2014 IPM Program for Vegetable Growers in New Hampshire

B. Project Period: Upon Governor and Council Approval through April 2015

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

E. **Deliverables Schedule:** A detailed description with schedule for each project is on file with the Department of Agriculture, Markets & Food

Major Project Components:

On Farm Monitoring: April 2014 through October 2014
Insect/Crop: Corn Earworms/sweet corn
Fall Armyworm/sweet corn
European Corn Borer/sweet corn
Squash Vine Borer/vine crops (June 2014 through September 2014)
Insect and Disease/greenhouse and high tunnel vegetables

Boom Sparyer Calibration: April 2014 through September 2014

Final Report: May 1, 2015

F. Budget and Invoicing Instructions: Campus will submit invoices on regular Campus invoice forms. Initial invoice for $29,171 at the time of Governor and Council approval, balance of grant to be billed no sooner than one month following initial invoice. State will pay Campus within 30 days of receipt of the invoice. 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	$21,747	0	$21,747
2. Employee Fringe Benefits	4,206	0	4,206
3. Travel	10,170	0	10,170
4. Supplies and Services	3,000	0	3,000
5. Equipment	0	0	0
6. Facilities & Admin. Costs	10,172	0	10,172
Subtotals		0	$49,295
In Kind Contribution		0	0
Total Project Costs			$49,295

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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 - "2014 IPM Program for Vegetable Growers in New Hampshire"

I. Itemized Budget

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

Expense Account
Salaries and Wages: $21,747
Employee Fringe Benefits: $4,206
Travel: $10,170
Supplies and Services: $3,000
Subtotal: $39,123
Facilities and Admin Costs: $10,172
Total $ 49,295

Professional Time:

George Hamilton, UNH CE Field Specialist, is the primary person conducting the project and will be managing the grant finances. All recommendations that are given to the farmers will be approved through the primary person conducting the project and maybe delivered through the IPM scouts hired for the project. The primary person conducting the project will make follow-up farm visits when necessary during the IPM scouting season.

Benefits Rate(s):

The Employee Benefit Rates are based on UNH's most current Rate Agreement with the U.S. Department of Health and Human Services, as required under OMB Circular A-21. A copy of the Rate Agreement is provided annually to the NH Department of Administrative Services. The full Employee Benefits rate applies to salaries and wages, except for hourly and college work study wages, graduate student salaries, and faculty summer salaries. The partial rate applies to non-student hourly wages, FICA-eligible graduate student pay, faculty summer salaries, and other exceptions to faculty and staff contract pay. The post-doctoral research rate applies to all post-doctoral staff.

Computer Technical Support:

These funds will be used to cover the cost of updating and maintaining UNH Cooperative Extension's IPM webpage and for the development of a web-based in-field data entry application. IPM Scouts will use the App to collect insect trap data in the field. A weekly IPM report will be e-mailed to the list of growers/farmers/orchardists.

Additional Labor:

IPM Scouts for Insect Monitoring and Scouting

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Two IPM Scouts will be hired for insect monitoring and scouting from April through November, 2014. One Scout will work 60 days and the second Scout will work 55 days. The IPM Scouts will work with farmers to set-up traps, check traps, monitor the crop on a weekly basis, and collect and record data throughout the growing season. Scouts will remove the traps from participating farms at the end of the season, clean and inventory the good traps and dispose of the traps that are no longer usable. Scouts will collect end of season farmer/grower surveys.

IPM Scout for Sprayer Calibration

An IPM Scout will be hired for five days to complete the sprayer calibration portion of the project. The IPM Scout will help conduct sprayer calibration demonstrations with an Extension Field Specialist from April through September, 2014.

Mileage:

Over the previous six years, the IPM Scouts averaged approximately 100 miles per day when conducting weekly farm visits to check traps and monitor crops. The total mileage is based on 120 days additional labor (IPM Scouts); 20 days for George Hamilton, UNH CE Field Specialist; 20 days travel for Dr. Alan Eaton, UNH CE Specialist; and 20 days of travel for Heather Bryant, UNH CE Field Specialist.

Supplies:

Funds will be used to purchase insect traps, trap supplies (i.e. poles, clips, strings, and stakes), insect pheromone lures or attractants, and printing expenses for forms used by IPM scouts.

Indirect costs:

The Facilities and Administrative Cost Rate is based on UNH's most current Rate Agreement with the U.S. Department of Heatlh and Human Services, as required under OMB Circular A-21, unless capped by the State of New Hampshire regulation, RFP or Federal Sponsor. A copy of the Rate Agreement is provided to the NH Department of Administrative Services when rates change.

II. Project Description

Develop an IPM program by monitoring and trapping insect pests of vegetables on a weekly basis throughout the summer of 2014 on a minimum of twenty-five farms. Insects to be monitored for sweet corn: European corn borer (ECB), corn earworm (CEW) and fall armyworm (FAW); and for vine crops: squash vine borer. Conduct sprayer calibration on New Hampshire farms to ensure proper application of pesticides.

III. Project Objectives

IPM COMPONENT:

Sweet corn

- Monitor European corn borer, corn earworm and fall armyworm pheromone traps to determine need, frequency and timing of insecticide application.

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- Reduce damage caused to sweet corn by the European corn borer, corn earworm and fall armyworm by properly timed insecticide applications.

Vine crops

- Determine when squash vine borer is active on vegetable farms and giant pumpkin patches.

- Work with vegetable and giant pumpkin growers to monitor squash vine borer using Heliothis traps with the Pacific Biocontrol Squash Vine Borer Lure to determine need, frequency and timing of insecticide applications.

- Reduce damage caused to cucurbit crops by the squash vine borer through properly timed insecticide applications.

SPRAYER CALIBRATION COMPONENT:

- Conduct sprayer calibration on New Hampshire farms to ensure proper application of pesticides.

IV. Economic and Environmental Impact

IPM COMPONENT:

Depending on the pattern and severity of fall armyworm and corn earworm populations in 2014, the sweet corn project may save New Hampshire sweet corn growers $50,000 to $150,000. In a year with low corn earworm and fall armyworm populations, the major savings is due to reduced application of pesticides. If pest populations are high, savings come from reduced culling (throwing away infested ears). We anticipate that this project will positively impact chrysanthmum and pepper crops as well, since European corn borer infests these crops. To avoid exhausting our clientele with questionaires, we have not measured possible impact on chrysanthemum or pepper crops, but know of growers who avoided significant injury because of notifications.

In past years, participating growers reported that the vine crop IPM project saved $5,000 in pesticide applications. Neither we nor our clientele have been able to measure reduction in crop losses from the squash vine borer work, but it likely occurs, especially on bush-type crops of Curcurbita pepo.

In addition to monetary savings, reducing application of insecticides helps protect populations of beneficial insects, including predators, parasitoids, and pollinators. Fewer pesticide applications reduce farm worker exposure to toxins, which is particularly important for those applicators involved in pesticide mixing and loading. Reduced spraying also reduces the opportunity for drift, thereby avoiding contamination of soil and water. Finally, while out on weekly farm visits, Scouts provide growers with valuable early warning information on other pests. For example, in 2013 an IPM Scout was the first person in the state to identify Northern Corn Leaf Blight. Based on this and subsequent monitoring, UNH Cooperative Extension publicized pictures for identification and recommendations for control. The reults of this side benefit study were presented October 30, 2013 at the North Country Vegetable Seminar in Whitefield, NH.

SPRAYER CALIBRATION COMPONENT:

Advances in agricultural chemicals have made precise application of pesticides more crucial than ever because of the high cost of chemicals and the danger of off-target spray drift. The economic impact of spray drift comes not only from the loss of off-target chemicals, but also from the potential

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damage the chemicals may cause to adjacent crops, the environment, animals, and people. Legal liability costs are on the rise, justifying added attention to properly calibrated and operation of spraying equipment.

Reasons for calibrating:

- Chemicals should be applied at the proper rate to be effective and to prevent contamination of soil and water. The calibration test indicates actual application rate with selected nozzles, pressure, sprayer design, and travel speed.

- The operator must know the application rate (on the chemical label) to determine the proper amount of chemical(s) to add to the sprayer tank. Once the actual application rate is known, it is easy to determine the acreage that a tankful or part of a tank will cover. Once this is established, the proper amount of chemical to add to the tank can be accurately determined.

- Applying a chemical at the wrong rate is detrimental. Using more than the desired amount of chemical is wasteful, may violate label rates, and may pollute the environment. Lower than recommended application rates may not effectively control the target pest.

- Actual application rates in the field may vary from nozzle catalog values, because of pressure gauge error, wheel slip, speedometer error, and friction loss in the plumbing. A catalog is satisfactory for selecting the correct nozzles, but the sprayer must be checked under actual operating conditions to adjust the pressure for the exact application rate required.

V. How will your goals be accomplished?

IPM COMPONENT:

Sweet Corn

o European Corn Borer: Two Heliothis traps with Scentry E-strain or 'New York' type pheromone lures and the Scentry Z- strain or 'Iowa' type pheromone lures, which are changed every four to six weeks from April/May through October.

o Corn Earworm: Heliothis trap with Hercon pheromone lure tapes, changed every two weeks from July through October.

o Fall Armyworm: Bucket or canister traps with Scentry FAW four component pheromone lures, changed every four to six weeks from May through October.

Vine Crops

o Squash Vine Borer: Heliothis trap with the Pacific Biocontrol SVB pheromone lures, changed every four to six weeks from June through September.

Greenhouse/High Tunnel Vegetables

o Pilot project - Sticky traps and crop monitoring at weekly intervals for insect and disease pest problems in greenhouse or high tunnel structures to determine if control options are needed.

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- Traps will be checked weekly throughout the 2014 growing season. Some insects are blown into the state on wind currents. Traps will help growers estimate the risk to crops and avoid unnecessary preventative sprays.

- Work with Dr. Alan Eaton, the UNH CE IPM Coordinator and Entomology Specialist, to determine if any special news statements need to be released on the status of any insect outbreaks.

- If there are major insect outbreaks, alerts will be published in the Weekly Market Bulletin and other news outlets.

- At the end of the season, participating growers will complete a survey.

SPRAYER CALIBRATION COMPONENT:

- One scout will be hired with funds from the New Hampshire Department of Agriculture, Markets & Food – IPM Grant to assist the project director with sprayer calibrations.

- Participating growers who complete a sprayer calibration exercise with UNH Cooperative Extension Specialists and the IPM Scout will be eligible to receive one private recertification credit if they have a NH private applicator, restricted use license. Each participant will be given fact sheets describing the sprayer calibration. If needed, adjustments will be made to the sprayer until it is properly calibrated. The calibration information will be recorded for the participants to keep in their records.

Sampling Methods

IPM COMPONENT:

- On-farm monitoring of insect pests will be conducted during the 2014 growing season on a minimum of twenty-five operations in New Hampshire with UNH CE personnel assisting.

- Weekly trap counts will be reported to the growers.

- Pheromone lures or baits used in the trap will be changed according to manufacturer recommendations.

- Traps may be moved according to crop conditions and maturity.

- Depending on the degree of material breakdown of traps during the growing season and storage of the traps; traps may have a life of two or more years.

SPRAYER CALIBRATION COMPONENT:

- Does not apply

VII. How will your data be evaluated?

IPM COMPONENT:

- At the end of the season, participating growers will complete a program evaluation survey to be reviewed by the UNH CE IPM Coordinator and/or other UNH CE personnel. The number of

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pesticide applications per sweet corn field, trap counts, and grower's concept of the amount of crop injury will be evaluated.

- Based on the monitoring counts collected during the season, UNH CE will decide if additional educational programming needs to be developed for vegetable growers.

SPRAYER CALIBRATION COMPONENT:

- Does not apply

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.

IPM COMPONENT:

- A weekly visit to each grower will be made to monitor trap counts where the grower will be provided the information on need, frequency and timing for insecticide control applications.

- Updates on insect pest situations will be given at scheduled grower twilight meetings throughout the growing season.

- If there are any major insect outbreaks, we will consider disseminating alerts through additional means, including Weekly Market Bulletin.

- A presentation on the results of this project will be developed and presented to vegetable growers upon request.

SPRAYER CALIBRATION COMPONENT:

- From the information gathered during the on-farm calibration, sprayer calibration fact sheets will be revised. A presentation on sprayer calibration will be developed. It will include the results of the farm calibrations.

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

- The UNH CE Specialists are available to give presentations on the information generated by this IPM project at workshops, conferences, and informal work sessions.

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